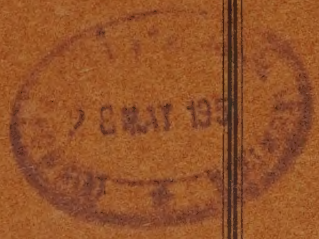
British West Indies Central Sugar Cane Breeding Station, Barbados

SIXTEENTH ANNUAL REPORT

For The Year Ending September 30th, 1949.



Advocate Co., Ltd.—Barbados.

Table of Contents

		Page
I.	FOREWORD	3
II.	SUGAR CANE BREEDING — SEEDLING SELECTION AND TRIALS	5
III.	DESPATCH OF SEEDLINGS TO THE CONTRIBUTING COLONIES	26
IV.	PERFORMANCE OF SEEDLINGS IN CONTRIBUTING COLONIES	28
V.	A NOTE ON THE LEAF SYMPTOMS DISPLAYED BY B.43391	34
VI.	A NOTE ON MOSAIC DISEASE	34
VII.	STATEMENT OF EXPENDITURE FOR 1948—49 ..	35
	APPENDIX I	36
	APPENDIX II	40
	APPENDIX III	42

I. FOREWORD.

ADVISORY COMMITTEE

The sixteenth meeting of the Advisory Committee was held in Antigua from 3rd to 5th of October, 1949, and the Proceedings of the Committee which have been circulated are appended to this Report.

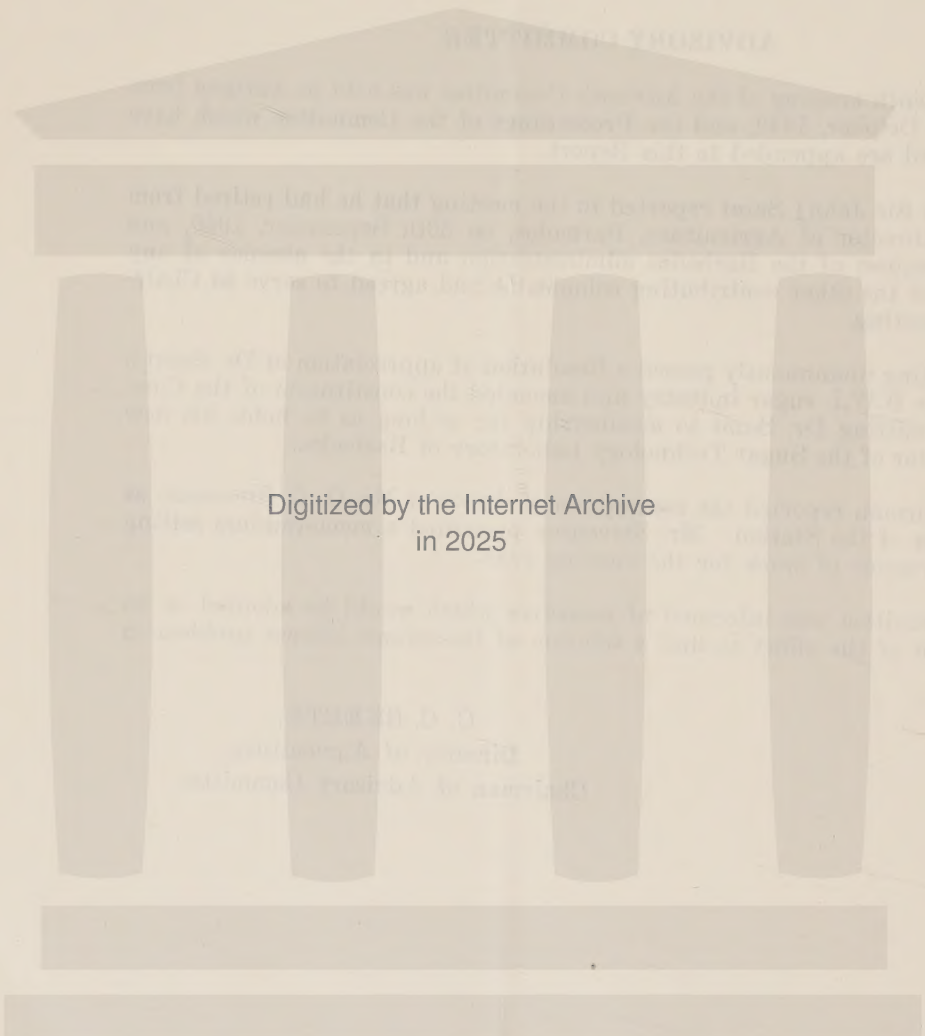
Dr. (now Sir John) Saint reported to the meeting that he had retired from the post of Director of Agriculture, Barbados, on 30th September, 1949, and that at the request of the Barbados administration and in the absence of any objection from the other contributing colonies he had agreed to serve as Chairman of the meeting.

The meeting unanimously passed a Resolution of appreciation of Dr. Saint's services to the B.W.I. sugar industry and amended the constitution of the Committee by admitting Dr. Saint to membership for so long as he holds his new post of Director of the Sugar Technology Laboratory of Barbados.

The Chairman reported the assumption of duties of Mr. G. C. Stevenson as Cytogeneticist of the Station. Mr. Stevenson presented a memorandum setting out his programme of work for the ensuing year.

The Committee was informed of measures which would be adopted as an intensification of the effort to find a solution of the mosaic disease problem in Jamaica.

C. C. SKEETE,
Director of Agriculture,
Chairman of Advisory Committee.



Digitized by the Internet Archive
in 2025

https://archive.org/details/annual-report-sugar-cane-breeding-station_1949-09-30_16

British West Indies Central Sugar Cane Breeding Station, Barbados

SIXTEENTH ANNUAL REPORT FOR THE YEAR ENDING THE 30TH SEPTEMBER, 1949.

II. SUGAR CANE BREEDING—SEEDLING SELECTION AND TRIALS

(i) SUGAR CANE BREEDING — B.s.50' AND B.51' SERIES

The usual methods were employed in the controlled crossing of various sugar cane varieties at Groves Agricultural Station from October, 1948, to January, 1949. The season was normal and arrowing was heavy. One hundred and seven crosses were obtained.

(ii) SEEDLING RAISING, POTTING AND PLANTING IN THE FIELD NURSERY

Germination was very good on the whole but, as always happens, some crosses proved to be incompatible and failed to produce viable seed. It is estimated that one hundred and twenty-six thousand seedlings were obtained, of which about thirty-five thousand were potted, and thirty thousand of these survived.

Table I gives, under group heads, a list of the crosses made, the number of seedlings germinated, potted and planted in the Field Nursery and in the B.s.50' First Year Seedling Trial, while Appendix I gives details of all crosses made.

TABLE I

Numbers of Crosses and Seedlings in each group germinated, potted and planted in the Field Nursery B.51' Series and the First Year Seedling Trial B.s.50' Series

Group	No. of Crosses	No. Germinated	No. Potted	No. Planted in Field Nursery	No. Planted in First Year Trial
S. officinarum x S. spontaneum					
Dacca nobilisation	1	800	200	160	—
Glagah nobilisations	3	6,040	190	169	—
S. officinarum x S. barberi					
Chunnee nobilisation	1	300	300	175	—
S. officinarum x S. robustum					
Robustum nobilisations	2	500	500	357	—
S. officinarum x S. Sinense					
Sinense nobilisations	2	50	50	38	—
S. officinarum x S. barberi x S. spontaneum					
Noble x Chunnee x Local ..	12	8,621	4,119	3,159	299
Noble x Chunnee x Glagah .	15	23,029	5,925	4,811	400
Noble x Celebes x Chunnee ..	2	6,100	450	421	—
Noble x Local x Chunnee x Glagah ..	32	44,360	13,190	9,328	1,562
Noble x Chunnee x Glagah x Celebes ..	5	3,630	1,470	1,275	—
Noble x Chunnee x Local x Celebes ..	4	6,420	1,120	884	200
Noble x Chunnee x Glagah x Local x Celebes ..	2	3,300	600	557	—
S. officinarum x S. spontaneum x S. spontaneum					
Noble x Local x Glagah ..	4	7,120	2,590	2,131	300
Noble x Glagah x Glagah ..	1	600	200	165	—
Noble x Glagah x Celebes ..	3	3,660	1,084	896	—
S. officinarum x S. barberi x S. spontaneum x S. sinense					
Noble x Chunnee x Glagah x Sinense	3	3,515	815	764	—
Noble x Chunnee x Glagah x Local x S. sinense ..	4	3,550	1,000	664	200
Noble x Chunnee x Local x Sinense	1	330	300	278	—
S. officinarum x S. spontaneum x S. sinense					
Noble x Glagah x Sinense ..	3	96	88	83	—
Noble x Glagah x Local x Sinense	1	3,560	190	183	—
S. officinarum x S. spontaneum x S. robustum					
Noble x Glagah x Robustum	2	400	250	204	—
S. officinarum x S. barberi x S. robustum					
Noble x Chunnee x Robustum	1	25	18	17	—
S. officinarum x S. barberi x S. spontaneum x S. robustum					
Noble x Chunnee x Local x Robustum	1	500	200	160	—
Noble x Chunnee x Local x Robustum	1	—	—	—	—
S. officinarum x S. barberi x S. sinense x S. spontaneum x S. robustum					
Noble x Chunnee x Glagah x Local x Sinense x Robustum	1	—	—	—	—
Grand Totals	107	126,506	34,849	26,879	2,961

(iii) *Planting the First Year Seedling Trial—B. 50' Series*

This series of seedlings was bred in 1947, potted and planted in the Field Nursery in 1948, and from this into the First Year Seedling Trial in October, 1948. Again, all seedlings considered to be too thin for commercial purposes were discarded at this stage, as well as all that arrowed heavily, except the seedlings which were required for breeding purposes only. This procedure greatly reduces the number of seedlings planted in the First Year Seedling Trial, and results in a great saving of time and labour during the crop season.

The numbers of crosses and seedlings in each group planted in the First Year Seedling Trial are summarised in Table II, while details for each cross are given in Appendix II.

TABLE II

Number of crosses and seedlings in each group planted in the First Year Seedling Trial, October 1948—B.50' Series

Group	No. of Crosses	No. of Seedlings Planted in Trial
S. officinarum x S. spontaneum		
Noble x Local	1	180
Noble x Glagah x Celebes	1	56
S. officinarum x S. barberi x S.		
Noble x Chunnee	1	120
S. officinarum x S. barberi x S. spontaneum		
Noble x Chunnee x Local	14	4,803
„ x „ x Local x Celebes	5	1,930
„ x „ x Glagah	3	220
„ x „ x Glagah x Celebes	4	605
„ x „ x Glagah x Local	19	1,955
„ x „ x Glagah x Local x Celebes	3	865
S. officinarum x S. spontaneum x S. sinense		
Noble x Glagah x Sinense	1	80
Noble x Glagah x Celebes x Sinense	1	90
S. officinarum x S. barberi x S. spontaneum x S. sinense		
Noble x Chunnee x Local x Sinense	1	40
Noble x Chunnee x Glagah x Sinense	1	102
Noble x Glagah x Local x Chunnee x Sinense	4	447
S. officinarum x S. spontaneum x S. sinense		
Noble x Glagah x Robustum	2	220
S. officinarum x S. barberi x S. robustum		
Noble x Chunnee x Robustum	1	63
S. officinarum x S. barberi x S. spontaneum x S. robustum		
Noble x Chunnee x Local x Robustum	2	271
Noble x Chunnee x Glagah x Local x Robustum	3	75
Totals	67	12,122

(iv) *Results of Reaping the First Year Seedling Trials—B.s.49' and B.49' Series*

These series of seedlings were bred in 1947 and 1946 respectively. The B.49' Series was planted in the Field Nursery in May 1947, and from this into

the First Year Seedling Trial in November 1947, while the B.s.49′ Series was planted from pots into a short season First Year Seedling Trial in May 1948.

As in previous years, the seedlings were cut, cleaned, bundled and laid out for inspection. Selection was made initially on appearance, and later, on the usual data obtained from each bundle.

Seventy-one selections were made from the B.s.49′ Series and three hundred and thirty from the B.49′ Series, making a total of four hundred and one altogether.

Tables III and IV give details of the field and final selections made from each cross in the B.49′ and B.s.49′ Series respectively.

TABLE III

First Year Seedlings—B.49′ Series, Field and Final Selections

Cross	No. of Seedlings Reaped	No. Field Selected	% Field Selection	No. Finally Selected	% Final Selection
Ba·11569 x B.45181 ..	150	16	11	5	3
B.3365 x B.34104 ..	360	32	9	20	6
B.3439 x B.(30) L.7 ..	64	4	6	4	6
„ x B.37175 ..	120	11	9	4	3
„ x B·37254 ..	67	3	4	—	—
„ x B.39250 ..	80	5	6	2	3
„ x Co.290 ..	160	9	6	4	3
B.34102 x B.34104 ..	110	10	9	6	5
„ x B.37193 ..	107	6	6	5	5
„ x B.4098 ..	240	23	10	16	8
B.34117 x B·43261 ..	90	6	7	2	2
B.35197 x B.34104 ..	204	25	12	12	6
„ x B.38279 ..	173	4	2	1	—
„ x B.39178 ..	100	7	7	3	3
„ x B.4543 ..	25	—	—	—	—
„ x B.45116 ..	15	3	20	1	7
„ x B.45184 ..	160	17	11	10	6
„ x B.45236 ..	60	2	3	2	3
B.35206 x P.O.J.2878 ..	55	7	13	6	11
B.35207 x B·34104 ..	360	22	6	15	4
„ x B.40255 ..	30	1	3	1	3
B.35218 x B.37261 ..	7	1	14	—	—
„ x B.4098 ..	95	8	8	7	7
„ x P.O.J.2878 ..	30	—	—	—	—
„ x C.P.36-134 ..	15	3	20	—	—
B.35247 x B·3337 ..	149	13	9	6	4
„ x B.34104 ..	330	31	9	14	4
„ x B.38279 ..	82	10	12	1	1
„ x B.4098 ..	100	10	10	7	7
„ x B.4306 ..	120	11	9	3	3
„ x B.43214 ..	150	6	4	4	3
„ x B·45283 ..	12	—	—	—	—
„ x Co.281 ..	86	—	—	—	—
B.37161 x B.3337 ..	110	8	7	5	5
„ x B.34104 ..	132	9	7	5	4
„ x B.4098 ..	66	5	8	4	6
„ x B.4327 ..	36	1	3	—	—
„ x B.45314 ..	44	7	16	4	9
„ x B.43337 ..	10	3	30	3	30
„ x B·43346 ..	93	4	4	1	1
„ x B.4452 ..	9	2	22	2	22
„ x Co.290 ..	101	6	6	5	5
„ x P.O.J.2878 ..	161	11	7	9	6

TABLE III— *Cont'd*

Cross		No. of Seedlings Reaped	No. Field Selected	% Field Selection	No. Finally Selected	% Final Selection
B.37226	x B.43290 ..	20	2	10	—	—
B.37227	x B.4098 ..	130	11	8	8	6
B.37266	x B.34104 ..	120	9	8	1	1
„	x B.37193 ..	120	9	8	1	1
B.38203	x B.34104 ..	179	10	6	7	4
„	x B.39156 ..	120	3	3	3	3
B.38233	x B.34104 ..	440	24	5	9	2
„	x B.4098 ..	13	2	15	1	8
„	x 32 M.Q. 629	24	3	12	2	8
B.38272	x B.4098 ..	90	9	10	3	3
B.39211	x B.45304 ..	30	2	7	—	—
B.4092	x B.37193 ..	26	8	31	6	23
B.40105	x B.37193 ..	60	3	5	1	2
B.40272	x B.34104 ..	60	3	5	3	5
„	x B.4098 ..	174	10	6	7	4
„	x B.43234 ..	8	2	25	2	25
„	x Co.290 ..	60	4	7	2	3
„	x Co.419 ..	100	3	3	3	3
B.41227	x B.37193 ..	120	11	9	4	3
B.42279	x B.37193 ..	90	9	10	3	3
B.4362	x C.P.36–134	10	2	20	—	—
B.43253	x B.39274 ..	120	8	7	4	3
B.43283	x B.41227 ..	140	19	13	15	11
B.43349	x B.37193 ..	80	7	9	3	4
B.4450	x B.45315 ..	10	—	—	—	—
B.4455	x B.4098 ..	120	14	12	8	7
B.4457	x B.34104 ..	140	7	5	3	2
„	x P.O.J.2878 ..	50	2	4	1	2
B.44130	x Ba.6032 ..	30	3	10	1	3
B.44233	x B.4098 .	120	13	11	4	3
B.4588	x B.4098 ..	40	—	—	—	—
B.45102	x B.41242 ..	90	3	3	—	—
B.45107	x B.40123 ..	10	1	10	1	10
B.45117	x B.35269 ..	56	3	5	1	2
B.45121	x B.(30)L.7 ..	81	3	4	1	1
B.45166	x B.3337 ..	12	—	—	—	—
B.45170	x B.37261 ..	18	—	—	—	—
B.45182	x B.34104 ..	110	10	7	3	2
B.45186	x B.39156 ..	18	—	—	—	—
B.45223	x B.4098 ..	90	8	9	3	3
B.45258	x B.44234 ..	15	4	27	2	13
B.45316	x B.37261 ..	30	4	13	2	7
M.D.47	x B.4098 ..	48	2	4	—	—
„	x B.45105 ..	80	1	1	1	1
Co.421	x B.45237 ..	120	14	12	8	7
„	x B.45301 ..	120	8	7	2	2
C.P.36–158	x B.34104 ..	100	8	8	2	2
Totals		8,510	643		330	

TABLE IV

First Year Seedlings B.s.49' Series, Field and Final Selections

Cross	No. Planted	No. Field Selected	% Field Selection	No. Finally Selected	% Final Selection
B.3439 x B.40123 ..	99	11	11	6	6
„ x B.45236 ..	100	3	3	2	2
B.34102 x B.34104 ..	97	5	5	1	1
B.35197 x B.34104 ..	486	36	7	15	3
„ x B.4098 ..	107	5	5	1	1
B.35247 x B.34104 ..	413	19	5	9	2
„ x B.4098 ..	207	6	3	1	1
„ x B.41227 ..	119	1	1	—	—
B.37161 x B.4098 ..	500	54	11	23	5
B.38203 x B.34104 ..	98	6	6	3	3
B.38233 x B.4098 ..	92	3	3	—	—
B.45170 x B.4098 ..	200	9	5	5	3
Co.421 x B.43290 ..	196	8	4	3	2
„ x B.43375 ..	200	12	6	2	1
Totals	2,914	178		71	

As a result of these trials, it has been decided not to repeat any of the following crosses, as the percentage number of seedlings selected from their progenies is not sufficiently large:—

B.3439 x B.37254	B.35247 x Co.281	B.4362 x C.P.36-134
B.34117 x B.37261	B.37161 x B.4327	B.4458 x B.4098
B.35197 x B.38279	B.37161 x B.43346	B.45102 x B.41242
B.35197 x B.4543	B.37226 x B.43290	B.45121 x B.(30) L.7.
B.35218 x B.37261	B.37266 x B.34104	B.45182 x B.34104
B.35218 x P.O.J. 2878	B.37266 x B.37193	M.D.47 x B.4098
B.35218 x C.P.36-134	B.39211 x B.45304	M.D.47 x B.45105
B.35247 x B.38279	B.40105 x B.37193	

(v) *Progress with Seedlings of the B.s.48' and B.48' Series*

The three hundred and ninety-nine seedlings of the B.s.48' and B.48' series were multiplied at Codrington and in October 1948, a minor selection reduced this number to two hundred and forty-one. The selected seedlings were then planted in the Central Sugar Cane Breeding Station Second Year Seedling Trials at the low rainfall station, Codrington, (two trials) and in duplicate trials at the high rainfall stations, Bowmanston and Hothersal. These trials will be reaped during the 1950 crop season. A short season trial including the selected seedlings of the B.s.48' series was also planted at Codrington during April 1949. The planting material available for this trial was very poor, and in spite of the liberal use of irrigation water, germination was also poor. Blank spaces in the plots were filled in with B.4098.

(vi) *Progress with Seedlings of the B.s.47' and B.47' Series.*

The selected seedlings of these series were planted in the Central Sugar Cane Breeding Station Second Year Seedling Trials at the low rainfall station,

Codrington (two trials) and in duplicate trials at the high rainfall stations, Todds and Drax Hall in November 1947. These trials were cut during the past crop season as plant canes, when forty-eight selections were made. Some of these will be tested further in Barbados, and in October, 1949, they will be sent direct to the various colonies for which they were selected.

The performances of the standard varieties together with those of the selected seedlings are given in Tables V and VI.

TABLE V

B.47′ Series — Second Year Seedling Trials — Plant Canes

Estates: Codrington, reaped 2nd — 7th February, 1949
Todds, reaped 22nd — 25 th March, 1949.

(Figures represent the means of 3 plots of 9 stools each)

Variety	Parentage	No. of Canes (Rotten)		% Arrowing		Z.H.R. Brix		Weight—Tons per acre	
		Codrington	Todds	Codrington	Todds	Codrington	Todds	Codrington	Todds
GROUP I									
B.37161	Standard	102(5)	130(13)	5	17	21.7	21.8	35.04	49.54
B.4098	Standard	141(9)	143(22)	4	70	21.9	21.6	47.71	48.86
B.s.4710	B.35207 x P.O.J.2878	102(7)	117(12)	59	84	21.7	21.4	32.61	44.83
B.s.4711	„ x „	117(3)	116(23)	3	36	21.7	21.9	40.42	45.89
B.s.4724	B.35247 x B.3337	145(6)	164(12)	7	12	20.9	21.9	32.93	46.37
B.s.4726	B.38233 x B.34104	122(8)	131(12)	31	71	21.5	21.5	34.75	42.43
GROUP II									
B.37161	Standard	113(11)	123(14)	1	15	21.9	21.0	36.86	44.74
B.4098	Standard	120(4)	130(22)	6	65	21.0	20.6	44.26	42.62
B.s.4733	B.4145 x B.34104	149(12)	110(10)	8	23	20.6	20.2	40.13	37.63
B.s.4738	Co.421 x B.4098	151(9)	147(25)	3	67	20.7	21.2	50.78	50.50
B.s.4743	„ x „	150(9)	134(16)	5	23	20.3	20.5	46.27	45.50
B.s.4744	„ x „	135(6)	140(20)	6	21	20.0	19.8	45.31	60.96
B.s.4746	Co.421 x B.41211	166(3)	145(13)	7	20	21.7	21.7	39.36	48.96
B.s.4747	„ x „	172(12)	154(20)	12	23	19.0	20.5	49.63	51.65
GROUP III									
B.37161	Standard	120(9)	142(17)	2	16	22.5	21.8	42.53	50.11
B.4098	Standard	121(8)	158(12)	—	74	20.6	21.7	51.84	54.31
B.4755	B.3365 x B.3337	125(10)	160(25)	—	42	22.9	21.2	38.50	49.44
B.4764	B.34102 x B.34104	129(13)	131(10)	8	80	20.8	22.9	47.14	47.90
B.4765	„ x „	126(8)	140(12)	4	78	21.2	21.0	51.17	46.85
GROUP IV									
B.37161	Standard	128(8)	108(7)	3	27	22.1	21.2	45.89	46.94
B.4098	Standard	135(6)	139(18)	—	45	22.0	21.0	53.73	45.50
B.4781	B.37161 x B.3337	115(11)	165(12)	—	6	22.3	21.2	38.02	49.73
B.4788	B.37161 x B.4098	118(6)	143(14)	3	66	21.2	21.7	46.46	46.94
B.4789	B.40272 x B.37193	137(7)	94(45)	—	28	21.9	20.5	48.96	29.28
GROUP V									
B.37161	Standard	111(6)	128(11)	2	33	21.2	22.0	40.22	48.58
B.4098	Standard	123(5)	147(12)	4	27	22.5	23.0	42.82	49.73
B.47112	B.3354 x B.34104	99(4)	111(23)	10	37	21.3	20.9	36.58	44.45
B.47135	B.34102 x B.3337	132(4)	152(4)	—	3	21.6	20.1	46.37	50.88
GROUP VI									
B.37161	Standard	131(7)	118(17)	2	34	20.8	21.7	42.14	47.62
B.4098	Standard	115(9)	145(21)	7	56	22.2	21.3	43.39	47.52
B.47147	B.3354 x B.34104	101(10)	121(17)	8	27	20.5	21.5	36.10	47.33
B.47151	B.35197 x B.41227	123(10)	126(20)	21	22	21.0	21.2	37.54	47.04
B.47162	B.35207 x B.41211	156(7)	158(18)	3	26	22.7	22.1	46.46	44.83
B.47179	B.35247 x B.3337	150(8)	173(10)	20	51	20.6	21.0	46.85	50.98
GROUP VII									
B.37161	Standard	99 (5)	133(6)	2	32	20.8	20.1	38.98	45.79
B.4098	Standard	119(4)	133(16)	7	61	22.7	22.1	46.94	48.67
B.47204	B.35247 x Co.419	125(12)	133(7)	18	39	20.5	20.8	46.18	45.22
B.47214	B.37161 x B.4098	100(13)	131(16)	2	7	20.7	20.2	38.88	52.97
GROUP VIII									
B.37161	Standard	107(6)	122(8)	8	46	21.5	22.2	42.53	48.10
B.4098	Standard	131(9)	139(9)	3	63	22.5	22.4	50.50	43.97
B.47225	B.37161 x P.O.J.2878	112(8)	138 (8)	31	76	22.6	22.6	43.87	41.47
B.47233	„ x „	97(26)	104(20)	1	23	20.2	21.7	38.02	43.78
B.47294	B.40272 x Co.290	79(28)	117(19)	6	82	20.7	21.4	28.51	35.81

Table VI

B.47' Series — Second Year Seedling Trials — Plant Canes

Estates: Codrington, reaped 1st — 4th March, 1949.

Drax Hall, reaped 28th — 31st March, 1949.

(Figures represent the means of 3 plots of 9 stools each)

Variety	Parentage	No. of Canes (Rotten)		% Arrowing		Z. H. R. Brix		Weight Tons per acre	
		Codrington	Drax Hall	Codrington	Drax Hall	Codrington	Drax Hall	Codrington	Drax Hall
GROUP IX									
B.37161	Standard	117(4)	129(8)	9	70	20.6	21.8	40.42	41.62
B.4098	Standard	127(6)	136(5)	—	73	20.9	23.5	48.19	44.55
B.47216	B.37161 x B.4098	103(7)	127(7)	2	3	19.7	23.2	39.65	43.60
B.47217	„ x „	124(12)	130(13)	1	—	18.9	22.2	43.78	46.87
B.47256	B.39254 x B.34104	119(4)	140(6)	—	18	18.6	21.8	43.30	42.57
GROUP X									
B.37161	Standard	105(6)	113(8)	5	34	20.3	22.5	41.28	37.32
B.4098	Standard	127(4)	146(12)	4	68	21.0	24.2	51.94	42.66
B.47258	B.39254 x B.34104	127(1)	146(7)	6	14	21.3	24.2	46.85	43.69
B.47262	B.4096 x B.3337	114(11)	149(8)	8	48	19.4	21.3	44.54	40.68
B.47298	B.41211 x B.34104	124(7)	130(8)	3	2	20.2	23.0	39.92	41.28
GROUP XI									
B.37161	Standard	105(5)	149(4)	—	46	19.6	21.7	41.09	43.00
B.4098	Standard	117(2)	150(6)	5	44	20.2	22.9	47.81	44.46
B.47306	Co.421 x B.34104	133(4)	160(2)	14	45	18.7	21.8	42.72	42.74
B.47310	„ x B.37193	137(1)	149(2)	8	61	19.5	22.6	42.91	39.39
B.47312	„ x „	125(3)	152(3)	3	54	17.9	21.1	47.12	39.90
B.47314	„ x „	160(3)	179(1)	2	2	20.7	23.1	49.54	48.50
B.47320	„ x B.41227	138(2)	139(6)	47	62	20.0	21.4	39.46	35.52
GROUP XII									
B.37161	Standard	125(5)	118(7)	6	58	20.0	22.6	49.06	42.05
B.4098	Standard	116(2)	140(6)	2	76	20.5	23.8	47.04	41.88
B.47348	B.34102 x B.34104	129(3)	134(3)	5	31	16.4	22.9	49.73	37.84
GROUP XIII									
B.37161	Standard	111(3)	116(4)	7	27	20.2	22.8	40.61	38.27
B.4098	Standard	110(3)	142(6)	1	20	20.5	23.7	40.61	47.99
B.47361	B.35207 x P.O.J.2878	120(4)	105(12)	4	33	16.9	22.2	40.69	35.09
B.47364	„ x „	122(2)	122(7)	1	23	18.7	21.9	38.02	38.61
B.47379	B.37161 x B.4098	120(1)	137(1)	1	2	18.7	22.2	50.78	49.88
GROUP XIV									
B.37161	Standard	95(3)	114(6)	6	45	20.2	21.5	39.07	41.62
B.4098	Standard	120(2)	148(7)	—	56	20.1	24.0	43.39	48.79
B.47380	B.37161 x B.4098	132(5)	153(10	1	9	22.1	24.4	40.42	45.15
B.47386	„ x „	123(7)	138(15)	11	77	20.6	22.4	41.92	34.83
B.47397	B.40272 x B.37193	105(5)	170(13)	—	18	19.6	21.8	38.21	48.71
B.47399	„ x Co.290	162(6)	141(9)	2	31	19.8	22.0	45.70	43.26
GROUP XV									
B.37161	Standard	104(1)	121(3)	4	56	20.3	22.4	37.63	37.75
B.4098	Standard	101(1)	142(11)	2	36	20.1	23.2	41.18	44.72
B.47410	B.40272 x Co.290	112(5)	135(13)	56	68	21.1	22.2	33.12	37.32
B.47419	P.O.J.2878 x B.34104	126(8)	138(8)	—	1	19.2	22.2	45.50	44.42

(vii) *Progress with Seedlings of the B.46′ Series.*

These seedlings were cut as plant canes during the 1948 crop season in the Central Sugar Cane Breeding Station Second Year Seedling Trials. They were cut as first ratoons during the past crop season at Colleton and Pool in the high rainfall area, when eight of the fifty-four selections were discarded on their ratoon performances. The outstanding seedlings in these trials under Barbados conditions would appear to be B.4691, B.46223 and B.46397, but no forecast as to the probable outcome of any of these varieties can be made at present.

The seedlings of the B.46′ Series which appeared to show most promise under Barbados conditions were planted in Third Year Seedling Trials in November 1948. These will be cut as plant canes during the 1950 crop season.

The performances of the selected seedlings together with those of the standard varieties are presented in Tables VII and VIII.

TABLE VII

B.46′ Series—Second Year Seedling Trials—First Ratoons

Pool—reaped 11th, 12th & 13th April, 1949

(Figures represent the means of 3 plots of 9 stools each)

Seedling	Parentage	No. of Canes (Rotten)	% Arrow-ing	Z.H.R. Brix	Weight Tons per Acre
		Pool	Pool	Pool	Pool
GROUP I					
B.37161	Standard	141(8)	27	21.8	43.43
B.4098	Standard	146(8)	30	22.5	43.95
B.4604	B.3354 x B.3337	120(9)	28	22.0	37.15
B.4608	„ x Co.290	128(23)	42	21.6	42.91
GROUP II					
B.37161	Standard	110(4)	32	21.7	41.02
B.4098	Standard	129(3)	35	20.8	41.88
B.4642	B.35197 x P.O.J.2878 ..	133(17)	20	21.6	37.58
B.4645	B.35206 x „ ..	131(4)	25	20.8	31.91
B.4647	„ x „ ..	147(8)	7	20.9	41.28
GROUP III					
B.37161	Standard	138(8)	24	22.2	44.46
B.4098	Standard	151(9)	24	21.6	40.33
B.4659	B.35218 x B.3337	108(13)	28	22.7	45.32
B.4668	„ x B.37175	101(23)	10	21.5	30.62
GROUP IV					
B.37161	Standard	146(6)	47	22.0	42.57
B.4098	Standard	162(3)	44	22.6	46.78
B.4681	B.35218 x P.O.J.2878 ..	116(22)	1	23.3	36.46
B.4682	„ x „ ..	144(17)	17	22.0	33.71
B.4688	B.35247 x B.3337	113(15)	23	19.6	40.25
B.4691	„ x „ ..	170(2)	30	22.4	55.13
B.4692	„ x B.34104	165(13)	16	19.3	37.32
B.4699	B.37161 x B.34104	163(5)	67	21.7	37.93
B.46102	„ x „ ..	125(6)	10	22.5	43.95
B.46103	„ x „ ..	139(8)	—	23.5	49.36

TABLE VII—*Concluded*

Seedling	Parentage	No of Canes (Rotten)	% Arrowing	Z.H.R. Brix	Weight Tons per Acre
		Pool	Pool	Pool	Pool
GROUP V					
B.37161	Standard	120(3)	40	21.7	39.47
B.4098	Standard	165(4)	47	22.1	45.92
B.46105	B.37161 x B.35187	161(7)	38	17.6	33.63
B.46113	„ x B.40256	110(5)	5	20.8	33.97
B.46116	„ x P.O.J.2878 ..	145(13)	32	19.3	35.52
GROUP VI					
B.37161	Standard	134(7)	49	21.7	42.74
B.4098	Standard	187(9)	25	22.0	44.46
B.46136	B.37161 x P.O.J.2878 ..	84(3)	35	21.6	34.31
B.46144	B.38212 x B.34104	125(4)	30	21.8	39.90
B.46149	B.4094 x B.3337	106(5)	10	22.7	36.98
B.46150	„ x „	227(6)	9	22.8	51.43
B.46151	B.4096 x B.35187	134(9)	17	22.2	38.27
GROUP VII					
B.37161	Standard	158(8)	41	22.2	48.23
B.4098	Standard	184(7)	33	22.3	51.51
B.46190	B.3439 x B.37175	158(11)	34	20.8	43.86
B.46199	„ x Pasoeroean ..	198(9)	52	23.2	46.01
GROUP VIII					
B.37161	Standard	146(6)	63	22.4	42.48
B.4098	Standard	158(5)	67	23.3	41.28
B.46204	B.3439 x P.O.J.2714 ..	164(3)	27	22.7	39.90
B.46218	B.34102 x B.3337	145(11)	52	23.1	46.96
B.46223	B.34117 x P.O.J.2878 ..	159(9)	—	22.5	53.15
B.46230	B.35197 x B.34104	136(8)	55	21.4	35.35
B.46232	„ x „	168(8)	17	21.0	44.63

TABLE VIII

B.46' Series — Second Year Seedling Trials — First Ratoons

Colleton — reaped 17th, 18th & 21st March, 1949.

(Figures represent the means of 3 plots of 9 stools each)

Seedling	Parentage	No of Canes (Rotten)	% Arrowing	Z.H.R. Brix	Weight Tons per Acre
		Colleton	Colleton	Colleton	Colleton
GROUP IX					
B.37161	Standard	142(4)	19	22.1	44.20
B.4098	Standard	140(9)	29	22.5	44.55
B.46248	B.35218 x B.4098	126(11)	15	21.6	33.54
GROUP X.					
B.37161	Standard	151(7)	27	22.1	43.77
B.4098	Standard	183(7)	32	22.2	51.43
B.46265	B.35247 x B.34104	196(9)	33	20.6	43.34
B.46281	B.37161 x „	119(7)	3	22.2	40.33
B.46284	„ x „	185(11)	—	22.1	48.07

TABLE VIII—*Concluded*

Seedling	Parentage	No. of Canes (Rotten)	% Arrowing	Z.H.R. Brix	Weight Tons per Acre
		Colleton	Colleton	Colleton	Colleton
GROUP XI					
B.37161	Standard	124(7)	22	22.6	40.08
B.4098	Standard	148(6)	19	21.7	46.10
B.46288	B.37161 x B.40256	128(6)	19	21.0	41.45
B.46289	„ x „	121(3)	12	21.6	32.51
B.46290	„ x „	149(5)	45	21.7	43.69
B.46293	B.37161 x P.O.J.2878 ..	131(7)	11	21.5	36.03
B.46295	„ x „	140(5)	—	21.7	39.73
B.46297	„ x „	103(6)	3	22.3	32.85
GROUP XII					
B.37161	Standard	182(10)	20	21.8	51.43
B.4098	Standard	153(16)	28	21.9	43.34
B.46308	B.37161 x P.O.J.2878 ..	153(3)	32	22.6	43.43
B.46320	B.40105 x B.37193	131(36)	9	20.6	34.40
B.46339	B.34102 x B.34104	170(8)	—	22.6	48.16
GROUP XIII					
B.37161	Standard	154(8)	23	21.3	44.20
B.4098	Standard	144(12)	15	22.1	43.43
B.46340	B.34102 x B.34104	130(4)	11	23.5	43.52
B.46351	B.35206 x P.O.J.2878 ..	142(4)	13	22.6	46.27
GROUP XIV					
B.37161	Standard	126(11)	25	22.1	42.70
B.4098	Standard	145(8)	54	22.0	46.10
B.46364	B.35247 x B.3337	141(9)	5	23.2	48.59
B.46369	„ x „	148(26)	19	20.1	48.33
B.46378	„ x „	152(9)	36	22.6	42.91
GROUP XV					
B.37161	Standard	129(4)	10	22.5	45.49
B.4098	Standard	186(5)	31	22.3	51.00
B.46391	B.37161 x P.O.J.2878 ..	137(4)	38	22.2	40.76
B.46394	„ x „	132(10)	3	23.2	36.38
B.46397	B.4096 x B.35187	174(13)	—	23.1	58.14
B.46399	B.40105 x B.37193	140(8)	4	21.3	30.36

(viii) THIRD YEAR SEEDLING TRIALS AND SELECT SEEDLING TRIALS

B.45' and Earlier Series

A. THE SEEDLINGS TESTED

1. Third Year Seedling Trials

Plant Canes:— B.4362, B.43337, B.43391, B.45188, B.45189, B.45200, B.45224, B.45267, B.45270 and B.45292.

First Ratoons:— B.37172, B.4335, B.4408, B.4425, B.4466, B.4491, B.44101, B.44111, B.44165, B.44182, B.44244, B.44254, B.44269, B.44278, B.44279 and B.44341.

2. Select Seedling Trials:

Plant Canes:— B.37161, B.4098, B.41211, B.41227, B.43391 and B.43337

Second Ratoons:— B.34104, B.37161, B.4098, B.41211 and B.41227.

In addition to the seedlings mentioned in the Third Year Seedling Trials, the commercial varieties recommended for cultivation in the area of each station were included as standards for purposes of comparison.

On account of extensive fires during the 1947 crop season which destroyed five large trials at once, it was not possible to cut the Central Sugar Cane Breeding Station Second Year Seedling Trial at Pool, and consequently selection had to be deferred until the ratoon crop was reaped during the 1948 crop season. The more outstanding seedlings of this half of the B.45′ Series were therefore planted in Third Year Seedling Trials along with the Seedlings of the B.46′ Series in November 1948. These trials will be cut as plant canes during the 1950 crop season.

Owing to the severe drought experienced during 1947, there was a shortage of planting material of most of the seedlings of the B.45′ Series when the Third Year Seedling Trials were being planted, so that some of the varieties could not be planted in all the trials. In these cases, more than one plot of the standard varieties has been introduced as a check on the accuracy of the trials. These plots indicate that the experiments are reasonably accurate and, in all cases, the yield differences are well within the difference which has been calculated for significance.

B. An Ecological Classification of the Trials

This classification was proposed by Turner after a study of the sugar cane soils of the British West Indies, and is based on the cultural requirements of the soil. It is as follows:—

Group I:— Soils with a natural tilth which require neither to be ploughed nor drained.

Group II:— Soils with a tilth which can be improved by ploughing, but which do not require drainage.

(a) Low Rainfall Areas

Third Year Seedling Trials

Plant Canes	Coverley

Select Seedling Trials

Plant Canes	Mangrove

(b) Intermediate Rainfall Areas

Third Year Seedling Trials

Plant Canes	Waterford and Foursquare
First Ratoons	Searles and Foursquare

(c) High Rainfall Areas

Third Year Seedling Trials

Plant Canes	Claybury and Portland
First Ratoons	Kendal and Portland

Select Seedling Trials

Plant Canes	Guinea
Second Ratoons	Mt. Wilton and Lancaster

Group III :—Soils which require to be drained, but are preferably left unploughed.

Group IV :—Soils with a poor natural tilth in which a tilth can be created by ploughing, but which require an elaborate system of drainage to maintain their tilth.

(b) INTERMEDIATE RAINFALL AREAS

Third Year Seedling Trials

Plant Canes	Woodbourne
First Ratoons	Bulkeley.

TABLE IX

C. RAINFALL DURING THE SEASONS

Month	1925—26 to 1944—45	1945—46	1946—47	1947—48	1948—49
January	3.17	0.84	4.03	3.66	3.01
February	1.59	1.28	2.12	1.39	1.30
March	1.69	0.59	0.78	0.66	2.83
April	1.88	4.96	3.60	1.23	0.57
May	2.36	6.37	3.42	1.11	2.91
June	4.37	5.33	3.41	7.53	5.15
July	6.45	5.38	5.30	7.99	9.54
August	6.30	10.29	5.65	2.31	10.34
September	7.45	7.62	5.91	2.85	11.72
October	8.33	4.57	2.77	5.09	7.49
November	10.08	6.89	3.89	2.70	10.53
December	4.26	2.55	5.77	2.28	4.42
January	3.09	4.03	3.66	3.01	1.25
February	1.57	2.12	1.39	1.30	1.04
March	1.66	0.78	0.66	2.83	1.37
TOTALS	64.25	63.60	52.36	45.94	73.47

The total rainfall for the 1948-49 crop season was above the average. It was also exceptionally well distributed and this resulted in a record crop, the tons sugar per acre of cane reaped being 3.85, the highest ever recorded. The total crop, however, did not exceed that of 1939, a year of abnormally heavy rainfall, but this was due to the fact that the acreage under cane in 1939 was some 1,800 acres greater than that for the 1949 crop. The main commercial variety was B.37161 which occupied 92.76% of the total acreage under cane. The only other variety of any importance was B.4098, which occupied 4.14%.

D. RESULTS OF THE TRIALS

In the Third Year Seedling Plant Cane Trials, the following data is obtained:— (1) yield in tons cane per acre, (2) Zeiss Hand Refractometer Brix Readings, (3) Percent. sucrose in juice from a sixty pound sample bundle of each variety taken from two of the six blocks and (4) the number of rotten canes per plot.

In the Third Year Seedling Ratoon Trials, the above data is recorded except that the sucrose in juice figures are not taken.

In the Select Seedling Plant Cane Trials, the data obtained is as follows:— (1) Tons cane per acre, (2) a complete analysis of the cane from a 120 pound sample bundle taken from each plot, and so (3) a calculated figure for yield of sucrose per acre and (4) the number of rotten canes per plot.

In the Select Seedling Ratoon Trials, the following data is taken:— (1) Tons cane per acre, (2) Zeiss Hand Refractometer Brix Readings and (3) the number of rotten canes per plot.

Table X

Soil Type:—Group II (a) Third Year Seedling Trials—Plant Canes Coverley—Cut 31/1/49 & 1/2/49

Variety	Tons Cane per Acre	Z.H.R. Brix	% Sucrose in Juice	Number of Rotten Canes per Plot
B.37161	29.73	21.3	17.1	9
B. 37161(a) ..	29.73	21.2	—	9
B.37161(b) ..	32.78	21.1	—	9
B.4098	30.26	21.6	18.5	3
B.4098(a) ..	30.19	22.5	—	4
B.41211	37.70	21.3	17.7	2
B.41211(a) ..	36.13	21.7	—	5
B.41211(b) ..	39.03	21.8	—	3
B.41227	33.48	22.1	18.8	7
B.41227(a) ..	32.22	22.3	—	8
B.4362	26.70	22.3	19.4	6
B.43337	33.56	21.0	17.0	2
B.43391	33.32	20.7	17.0	9
B.45224	30.86	21.7	18.2	8
B.45267	34.07	22.1	18.2	8

Significant Difference P = 0.05 = ± 3.29 tons cane per acre.

In this trial, B.41211 was outstanding, outyielding the other varieties tried as well as the standards. B.45267 gave quite a heavy yield of plant cane and juice of good quality. However, it held its trash very firmly and was so difficult to clean that it cannot be considered as a commercial variety in Barbados. Good yields were also given by the varieties B.41227, B.43337 and B.43391, although the juice quality of the two latter varieties was relatively poor. However, B.43391 is known to be a late maturing variety, so the juice may have been expected to be better later in the crop season. The juice quality of B.4362 was outstanding, but the variety appears to do better under wetter conditions than obtained at this station.

TABLE XI

Soil Type :—Group II (a) Select Seedling Trials—Plant Canes
Mangrove—Cut 12th February, 1949

Variety	Tons Cane per Acre	Tons Sugar per Acre	Per Cent. Sucrose in Cane	Brix	Quotient of Purity	Per Cent. Glucose in Juice	Number of Rotten Canes per Plot
B.37161 ..	28.56	4.22	14.8	20.1	89.1	0.39	17
B.4098 ..	27.49	4.44	16.2	22.2	88.6	0.40	17
B.41211 ..	36.03	5.37	14.5	20.4	86.7	1.08	9
B.41227 ..	30.21	4.34	14.4	20.1	87.7	0.69	10
B.43391 ..	29.53	4.22	14.3	19.9	87.1	0.95	17

Significant Difference P = 0.05 = ± 2.95 tons cane per acre and
± 0.48 tons sugar per acre.

At Mangrove, B.41211 was outstanding, greatly and significantly outyielding all other varieties tried on cane and sugar. The differences between the mean yields of the other varieties tried proved to be statistically insignificant. B.41227 gave the second heaviest yield, but it is apparent that this was due solely to the very favourable weather conditions during the growing period, as this variety does not stand up well under dry conditions. B.4098 gave the lowest yield of cane, but made up for this by its very good juice quality, giving the second highest yield of sugar.

TABLE XII

Soil Type:—Group II (b) Third Year Seedling Trials—Plant Canes
Waterford—Cut 8th & 9th February, 1949
Foursquare—Cut 23rd & 24th February, 1949.

Variety	Tons Cane per Acre.		Z. H. R. Brix		% Sucrose in Juice.		Number of Rotten Canes per plot.	
	Waterford	Foursquare	Waterford	Foursquare	Waterford	Foursquare	Waterford	Foursquare
B.37161 ..	34.64	29.21	21.9	22.2	18.7	20.4	4	9
B.37161 (a)	34.98	32.96	21.4	22.9	—	—	7	7
B.37161 (b)	33.72	—	21.9	—	—	—	6	—
B.4098 ..	41.30	34.85	21.9	23.7	18.2	20.4	6	8
B.4098(a)	40.66	—	22.4	—	—	—	6	—
B.4098(b)	40.31	—	22.3	—	—	—	7	—
B.41211 ..	41.14	44.79	21.3	22.5	17.7	17.1	7	10
B.41227 ..	38.15	35.30	21.7	22.3	18.5	19.6	9	9
B.4362 ..	37.29	34.95	22.9	23.6	20.6	21.1	10	15
B.43337 ..	—	37.52	—	21.4	—	18.3	—	6
B.43391 ..	35.65	34.40	20.8	21.3	17.5	17.7	7	7
B.45188 ..	33.70	31.28	20.8	22.3	17.7	18.7	7	10
B.45189	35.02	32.55	23.0	24.4	19.0	21.1	3	6
B.45200	—	24.91	—	22.3	—	19.6	—	18
B.45224 ..	32.01	30.17	21.2	22.6	18.2	20.6	13	13
B.45267	43.38	38.91	22.8	22.8	20.1	19.8	10	12
B.45270	37.59	31.19	21.0	22.9	17.6	19.3	9	26
B.45292	—	21.23	—	23.4	—	20.8	—	16

Significant Difference P = 0.05 = ± 4.58 tons cane per acre at Waterford &
± 4.31 „ „ „ „ at Foursquare

At Waterford, B.45267 gave the heaviest yield of plant cane, and had a very good juice. However, it held its trash so firmly and was so difficult to clean that it cannot be recommended for commercial cultivation. B.4098 and B.41211 also gave very good yields of cane in this trial. The yields of B.41227, B.4362, B.43391, B.45189 and B.45270 all exceeded B.37161, but not significantly. B.41227, B.4362 and B.45189 had juices of outstanding quality at this stage of the crop season.

At Foursquare, B.41211 was outstanding, greatly and significantly out-yielding all other varieties tried on cane yield. The juice quality was, however, poor, and the canes were obviously unripe. B.41227, B.4362, B43337 and B.45267 all exceeded the yields given by the standard varieties B.37161 and B.4098. B.41227, B.4362, B.45189, B.45200, B.45224, B.45267 and B.45292 all had juices of exceptionally good quality. The varieties B.4362 and B.41227 are not well suited to the lower rainfall areas of Barbados, and their performances in these trials may be considered exceptional.

TABLE XIII

Soil Type :—Group II (b) Third Year Seedling Trials — First Ratoons
Searles — Cut 25th and 28th February, 1949.
Foursquare — Cut 21st and 22nd February, 1949.

Variety.	Tons Cane per Acre		Z. H. R. Brix		Number of Rotten Canes per Plot	
	Searles	Four-square	Searles	Four-square	Searles	Four-square
B.37161	27.21	31.31	22.8	22.7	3	8
B.4098	30.55	31.91	23.1	24.1	3	3
B.37172	18.27	20.09	23.7	23.4	3	4
B.4335	24.98	23.88	23.4	24.0	12	9
B.4408	22.56	24.97	22.1	21.6	3	7
B.4425	30.77	34.58	22.4	22.7	10	6
B.4466	30.78	32.34	22.3	22.1	3	7
B.4491	31.90	30.96	22.0	22.3	2	5
B.44101	26.62	28.67	22.9	23.1	3	5
B.44111	25.14	30.33	23.1	24.2	5	8
B.44165	21.32	17.44	25.1	24.2	6	7
B.44182	27.23	25.33	22.0	22.4	4	6
B.44244	27.49	25.65	22.9	23.1	2	2
B.44254	24.87	23.58	21.2	20.7	8	8
B.44269	26.56	22.61	22.1	22.5	5	4
B.44278	27.83	31.57	21.5	21.9	2	5
B.44279 ..	25.18	27.31	22.7	23.1	5	7
B.44341	24.99	28.20	23.4	23.4	6	8

Significant Difference P=0.05 = ± 3.64 tons cane per acre at Searles &
± 4.40 „ „ „ „ „ Foursquare.

At Searles, the varieties B.4425, B.4466 and B.4491 exceeded the yields given by the standard varieties, but the differences between the mean yields cannot be shown to be significant. B.44341 which gave the heaviest yield as plant cane, ratooned very poorly. The juice qualities of most of the varieties, as revealed by the Zeiss Hand Refractometer Readings, were quite good on the whole, that of B.44165 being outstanding.

At Foursquare, B.4425, B.4466 and B.4491 gave yields exceeding the standard varieties B.37161 and B.4098, although the differences between the mean

yields cannot be shown to be significant. B.44111 and B.44278 gave yields comparable with those given by the standard varieties. As at Searles, the juice qualities of most of the varieties were quite satisfactory.

TABLE XIV

Soil Type :—Group II (c) Third Year Seedling Trials — Plant Canes
Claybury — Cut 7th and 8th March, 1949
Portland — Cut 9th and 10th March, 1949

Variety	Tons Cane per Acre		Z. H. R. Brix		% Sucrose in Juice		Number of Rotten Canes per plot	
	Claybury	Portland	Claybury	Portland	Claybur.	Portland	Claybury	Portland
B.37161 ..	40.53	37.68	20.9	21.1	16.8	17.8	9	14
B.37161 (a) ..	40.23	36.45	20.9	21.0	—	—	12	12
B.37161 (b) ..	—	37.86	—	21.4	—	—	—	8
B.4098	43.24	45.35	21.2	21.8	17.8	16.6	19	16
B.4098 (a) ..	—	46.90	—	22.0	—	—	—	16
B.41211 ..	40.33	*42.41	21.0	21.1	16.9	15.3	119†	32
B.41211 (a) ..	—	44.25	—	21.1	—	—	—	32
B.41227 ..	47.73	44.45	20.7	21.6	16.8	18.1	26	29
B.41227 (a) ..	—	45.58	—	22.1	—	—	—	38
B.41227 (b) ..	—	45.61	—	21.6	—	—	—	24
B.4362	28.71	43.74	22.7	22.8	19.5	19.3	75†	19
B.43337 ..	43.94	44.34	20.1	20.9	16.8	17.1	13	27
B.43391 ..	49.08	45.22	20.7	20.9	15.2	17.4	15	18
B.45188 ..	41.30	—	21.2	—	17.5	—	14	—
B.45189 ..	40.53	—	22.4	—	17.2	—	16	—
B.45200 ..	33.22	—	21.9	—	19.5	—	8	—
B.45224 ..	35.25	34.73	20.4	20.9	15.6	17.3	23	32
B.45267 ..	49.56	42.45	20.4	20.9	13.8	16.7	33	43
B.45270 ..	45.54	—	21.1	—	18.2	—	12	—
B.45272 ..	32.30	—	22.4	—	18.7	—	20	—

Significant Difference P=0.05 = ± 6.27 tons cane per acre at Claybury &
± 5.36 „ „ „ „ „ Portland

* *Two of the plots in this trial were damaged and this caused a reduction of the yield from this variety.*

† *Severe rat damage in some of the plots.*

At Claybury, B.45267, B.43391 and B.41227 were outstanding. The juice quality of B.45267 was, however, very poor. B.45270 also put up a good performance, and in addition had good juice quality. B.41211, B.43337, B.45188 and B.45189 gave yields comparable with those given by the standard varieties. The yield of B.4362 was very disappointing, but the juice quality was excellent. B.4362 and B.41211 both suffered heavily in some plots from rat damage. The field in which this trial was laid down was somewhat uneven, and this is reflected in the very high tonnage required for significance.

At Portland, B.4098, B.41211, B.41227, B.4362, B.43337, B.43391 and B.45267 were all very good. As usual, the juice quality of B.4362 was outstand-

ing. B.41211 had two plots damaged rather severely, one by labourers cutting canes for chewing and the other by the recent erection of a telephone pole. As at Claybury, the field in which this trial was laid down appeared to be rather uneven, and the variation in yield from plot to plot was high, resulting in a high figure for significance.

Table XV

Soil Type :—Group II(c) Third Year Seedling Trials — First Ratoons

Kendal — Cut 20th and 21st April, 1949

Portland — Cut 11th and 14th March, 1949

Variety	Tons Cane per Acre		Z.H.R. Brix		Number of Rotten Canes per Plot	
	Portland	Kendal	Portland	Kendal	Portland	Kendal
B.37161 ..	38.46	38.92	22.4	23.6	5	7
B.4098 ..	43.04	36.51	21.5	23.7	10	11
B.37172 ..	29.47	31.08	22.5	24.1	4	4
B.4335 ..	35.71	31.47	21.3	24.6	14	15
B.4408 ..	36.26	36.80	20.7	22.5	9	9
B.4425 ..	34.62	38.88	22.2	23.7	12	7
B.4466 ..	44.16	39.69	22.1	23.6	2	2
B.4491 ..	34.88	41.79	22.6	23.4	12	2
B.44101 ..	38.89	40.31	21.5	23.6	12	7
B.44111 ..	37.21	33.61	22.3	23.2	18	24
B.44165 ..	34.42	36.48	22.4	25.2	10	10
B.44182 ..	36.65	36.98	21.0	23.1	14	9
B.44244 ..	34.56	39.85	20.9	23.0	5	4
B.44254 ..	32.40	33.05	20.0	21.2	12	5
B.44269 ..	36.48	37.40	21.3	22.8	3	4
B.44278 ..	39.22	34.38	21.0	22.7	3	3
B.44279 ..	37.64	34.98	22.2	24.1	4	5
B.44341 ..	38.87	31.04	21.9	24.1	12	9

Significance Difference P=0.05 = ± 3.58 tons cane per acre at Portland &
± 3.40 „ „ „ „ „ Kendal.

At Portland, B.4466 gave the heaviest yield of ratoon cane, closely followed by the standard variety B.4098. B.4408, B.44101, B.44111, B.44182, B.44269, B.44278, B.44279 and B.44341 all gave yields comparable with the standard variety B.37161. The juice qualities of the majority of the varieties were satisfactory.

At Kendal, the varieties B.4466, B.4491, B.44101 and B.44244 gave yields exceeding those given by the standard varieties, but in no case were any of these varieties significantly better than the standards. The varieties B.4408, B.4425, B.44165, B.44182 and B.44269 gave yields comparable with those given by the standard varieties. The juice qualities of most of the varieties as revealed by the Zeiss Hand Refractometer Brix Readings, were very good, the juice of B.44165 being particularly good.

TABLE XVI

Soil Type :—Group II(c) Select Seedling Trials — Plant Canes
Guinea — Cut 23rd March, 1949

Variety	Tons Cane per acre	Tons Sugar per acre	% Sucrose in Cane	Brix	Quotient of Purity	% Glucose in Juice	No. of Rotton Canes per Plot
B.37161 ..	42.40	6.24	14.7	20.0	88.3	0.85	40
B.41211 ..	51.53	6.43	12.5	20.1	72.3	3.22	66
B.41227 ..	42.76	6.47	15.1	20.9	84.4	1.54	70
B.43337 ..	41.08	5.14	12.5	18.5	80.6	1.93	78
B.43391 ..	48.17	6.22	11.6	19.6	70.3	2.96	65

Differences between mean yields are insignificant.

Although this field appeared to be quite level and even, the variation in yield from plot to plot of each variety was excessively high, and the differences between mean yields were consequently insignificant. At the time of reaping, none of the varieties was ripe. This can be seen from the sucrose in cane and quotient of purity figures. B.41211 gave the heaviest yield of cane followed by B.43391, but B.41227 on account of its better juice quality gave the heaviest yield of sugar. Most of the plots were damaged by rats, and this is reflected in the large number of rotten canes found.

TABLE XVII

Soil Type :—Group II (c) Select Seedling Trials—Second Ratoons
Mount Wilton — Cut 3rd May, 1949
Lancaster — Cut 4th May, 1949

Variety.	Tons Cane per Acre		Z. H. R. Brix		Number of Rotten Canes per Plot	
	Mt. Wilton	Lancaster	Mt. Wilton	Lancaster	Mt. Wilton	Lancaster
B.34104	36.00	31.27	23.2	24.7	41	86
B.37161	31.11	31.50	23.2	23.8	33	39
B.4098	38.17	33.17	23.4	24.4	53	64
B.41211	44.48	25.31	23.2	23.7	60	218
B.41227	39.96	35.57	23.4	23.3	79	44

Significant Difference P=0.05 = ± 3.36 tons cane per acre at Mount Wilton
± 3.15 „ „ „ „ „ Lancaster.

At Mount Wilton, B.41211 was outstanding, significantly outyielding all other varieties tried. B.41227 was second, closely followed by B.4098, B.41227 was significantly better than B.34104 and B.37161 while B.4098 and B.34104 were significantly better than B.37161. There was little to choose between the juice qualities of any of the varieties tried.

At Lancaster, B.41227 gave the heaviest yield of second ratoon cane, being significantly better than B.34104, B.37161 and B.41211. B.4098, B.34104 and B.37161 were significantly better than B.41211. In this trial, B.41211 suffered heavily from rat damage, while the plot nearest the road had been discovered by intruders, and little was left of it at the time of cutting. B.34104 and B.4098 gave juices of best quality as judged by the Zeiss Hand Refractometer Brix Readings.

TABLE XVIII

Soil Type :—Group IV (b) Third Year Seedling Trials—Plant Canes
Woodbourne—Cut 15th and 16th March, 1949

Variety	Tons Cane per Acre	Z.H.R. Brix	Percent Sucrose in Juice	Number of Rotten Canes per Plot
B.37161	29.33	22.6	18.9	7
B.37161 (a)	28.64	22.9	—	10
B.4098	29.33	23.7	20.8	10
B.41211	36.41	22.8	18.6	9
B.41227	31.19	23.6	20.0	14
B.4362	32.55	24.8	21.9	13
B.43337	31.77	21.3	18.2	10
B.43391	29.50	22.2	18.4	11
B.45188	27.84	22.5	19.7	8
B.45189	28.65	24.1	22.2	5
B.45200	27.51	23.1	21.1	9
B.45224	27.73	23.7	20.8	17
B.45267	31.48	23.3	21.0	7
B.45270	28.50	23.4	20.3	28
B.45292	19.19	23.6	20.4	11

Significant Difference P=0.05 = ±2.42 tons cane per acre.

In this trial, B.41211 greatly and significantly outyielded all the other varieties tried. B.4362 and B.43337 also significantly outyielded the standard varieties, while the varieties B.41227, B.43391 and B.45267 gave yields greater than those given by the standard varieties, but the differences between the mean yields of these varieties and the standard varieties cannot be shown to be significant.

The juice qualities of all of the varieties tried were fairly good, but those of B.4098, B.41227, B.4362, B.45189, B.45200, B.45224, B.45267, B.45270 and B.45292 were outstanding.

TABLE XIX

Soil Type:—Group IV (b) Third Year Seedling Trials—First Ratoons
Bulkeley—Cut 27th and 28th April, 1949.

Variety	Tons Cane per Acre	Z. H. R. Brix	Number of Rotten Canes per Plot
B.37161	37.38	22.9	8
B.4098	40.68	24.1	7
B.37172	37.06	24.2	8
B.4335	29.87	24.6	31
B.4408	35.84	22.9	13
B.4425	39.59	23.5	15
B.4466	34.63	22.6	9
B.4491	37.87	23.0	14
B.44101	35.91	23.2	12
B.44111	36.58	23.3	31
B.44165	31.28	25.2	19
B.44182	38.43	22.5	23
B.44244	36.46	23.3	15
B.44254	33.58	22.5	33
B.44269	36.77	22.4	9
B.44278	35.19	21.8	5
B.44279	33.35	23.4	7
B.44341	34.12	23.6	12

Significant Difference P = 0.05 = ± 3.52 tons cane per acre.

In this trial, none of the varieties under trial outyielded the standard B.4098. The varieties B.37172, B.4425, B.4491, B.44111, B.44182, B.44244, B.44254 and B.44269 gave yields comparable with those given by the standards. The juice qualities of all varieties were very good on the whole, but the varieties B.44165, B.4335, B.37172 and B.4098 were outstanding in this respect.

SUMMARY

In the Third Year Seedling Plant Cane Trials, the only variety of the B.45' Series which showed promise was B.45267, and this held its trash so firmly and was so difficult to clean that it cannot be considered as a commercial cane in Barbados. B.41211, B.41227, B.4362, B.43337 and B.43391 all showed promise as plant canes. B.41211 was outstanding from the yield of canes point of view, but unless it is ripe at the time of cutting, the juice quality is liable to be poor. B.41227 has given some good yields of cane and has a good juice but, generally speaking, this variety is not at its best in the dry and intermediate rainfall areas of Barbados, and cane growth is very severely limited by heavy arrowing in the high rainfall areas. The same remarks apply to B.4362, but this variety has an excellent juice and may be useful for early reaping. B.43337 is at its best in the low and intermediate rainfall areas. It gives a heavy yield of cane, but the juice quality is only moderate. In the high rainfall areas, arrowing severely limits cane growth. B.43391 is at its best in the high rainfall areas. Arrowing is very sparse at the best of times, and so cane growth is not limited to any extent. B.43391 is a late maturing variety so that the juice quality may be expected to be poor if the crop is cut too early. Its main disadvantage is that the canes are comparatively thin.

In the Third Year Seedling Ratoon Trials, the varieties B.4425 and B.4466 appear to show some promise under certain conditions. B.4425 is a thick cane with a very good juice. It is self trashing to all intents and purposes, and requires little cleaning when it is cut. B.4466 is a medium to thick cane, light green, with a heavy bloom of white wax which gives it a white appearance. The canes are inclined to be short, but there are a large number per stool, which tends to make up for this short coming to some extent. The variety tends to hold its trash near the top rather firmly, but otherwise is easily cleaned. The juice is good when the canes are ripe, which is usually from mid crop onwards. This variety appears to be an excellent ratooner. B.44341 did not maintain its early promise as a plant cane in the ratoon trials.

In the Select Seedling Trials, B.41211 has been outstanding except where damaged by rats or otherwise. B.41227 and B.43391 have also turned in some good performances. All three of these varieties have now been recommended for planting in Barbados on a commercial scale.

III. DESPATCH OF SEEDLINGS TO THE CONTRIBUTING COLONIES

Planting material of the first half of the B.45' series and the B.46' series was despatched direct to the various colonies in October, 1948. The Table below lists the varieties and the colonies to which each was sent:—

Variety	Colonies				
B.4502 ..	Antigua	St. Kitts	Trinidad	British Guiana	Jamaica
B.4503 ..	Antigua	St. Kitts	Trinidad		Jamaica
B.4504 .	Antigua	St. Kitts	Trinidad	British Guiana	Jamaica
B.4506 .	Antigua	St. Kitts	Trinidad	British Guiana	Jamaica
B.4514 ..			Trinidad		Jamaica
B.4526 ..			Trinidad		Jamaica
B.4530 ..	Antigua	St. Kitts	Trinidad	British Guiana	Jamaica
B.4531 ..			Trinidad		Jamaica
B.4534 ..	Antigua	St. Kitts	Trinidad	British Guiana	Jamaica
B.4553 ..	Antigua	St. Kitts	Trinidad	British Guiana	Jamaica
B.4556 ..	Antigua	St. Kitts	Trinidad	British Guiana	Jamaica
B.4572 ..	Antigua	St. Kitts	Trinidad	British Guiana	Jamaica
B.4581 ..	Antigua	St. Kitts	Trinidad		Jamaica
B.4596 ..	Antigua	St. Kitts	Trinidad	British Guiana	Jamaica
B.45137 ..	Antigua	St. Kitts	Trinidad	British Guiana	Jamaica
B.45141 ..			Trinidad		Jamaica
B.45151 ..	Antigua	St. Kitts	Trinidad	British Guiana	Jamaica
B.45152 ..	Antigua	St. Kitts	Trinidad	British Guiana	Jamaica
B.45155 ..			Trinidad		Jamaica
B.45156 ..	Antigua	St. Kitts	Trinidad	British Guiana	Jamaica
B.45188 ..		St. Kitts	Trinidad		Jamaica
B.45224 ..	Antigua		Trinidad		Jamaica
B.45237 ..		St. Kitts			Jamaica
B.45267 ..		St. Kitts	Trinidad		
B.45270 ..	Antigua		Trinidad		Jamaica
B.4604 ..	Antigua	St. Kitts	Trinidad	British Guiana	Jamaica
B.4608 ..			Trinidad	British Guiana	Jamaica
B.4642 ..					Jamaica
B.4645 ..					Jamaica
B.4647 ..					Jamaica
B.4668 ..				British Guiana	
B.4681 ..	Antigua	St. Kitts	Trinidad	British Guiana	Jamaica
B.4688 ..				British Guiana	
B.4691 ..	Antigua	St. Kitts	Trinidad	British Guiana	Jamaica
B.4692 ..	Antigua	St. Kitts	Trinidad	British Guiana	Jamaica
B.4699 ..			Trinidad	British Guiana	Jamaica
B.46102 ..	Antigua	St. Kitts	Trinidad	British Guiana	Jamaica
B.46103 ..			Trinidad	British Guiana	Jamaica
B.46116 ..			Trinidad	British Guiana	Jamaica
B.46136 ..	Antigua	St. Kitts	Trinidad	British Guiana	Jamaica
B.46144 ..	Antigua	St. Kitts	Trinidad	British Guiana	Jamaica
B.46150 ..				British Guiana	
B.46151 ..			Trinidad	British Guiana	Jamaica
B.46190 ..				British Guiana	
B.46204 ..					Jamaica
B.46218 ..			Trinidad	British Guiana	Jamaica
B.46223 ..	Antigua	St. Kitts	Trinidad		Jamaica
B.46230 ..				British Guiana	
B.46232 ..	Antigua	St. Kitts	Trinidad	British Guiana	Jamaica
B.46248 ..				British Guiana	
B.46281 ..			Trinidad	British Guiana	Jamaica
B.46284 ..	Antigua	St. Kitts			Jamaica
B.46288 ..	Antigua	St. Kitts	Trinidad	British Guiana	Jamaica
B.46290 ..				British Guiana	
B.46293 ..			Trinidad	British Guiana	Jamaica
B.46295 ..			Trinidad	British Guiana	Jamaica
B.46297 ..	Antigua	St. Kitts	Trinidad	British Guiana	Jamaica
B.46308 ..			Trinidad	British Guiana	Jamaica
B.46339 ..			Trinidad	British Guiana	Jamaica
B.46340 ..			Trinidad	British Guiana	Jamaica

Variety	Colonies				
B.46351 ..			Trinidad	British Guiana	Jamaica
B.46364 ..	Antigua	St. Kitts			Jamaica
B.46369 ..				British Guiana	
B.46378 ..			Trinidad	British Guiana	Jamaica
B.46384 ..			Trinidad	British Guiana	Jamaica
B.46391 ..					Jamaica
B.46394 ..			Trinidad	British Guiana	Jamaica
B.46397 ..	Antigua	St. Kitts	Trinidad		Jamaica
B.46399 ..				British Guiana	
B.37172 ..	St. Vincent				

In addition to the above, planting material was sent to the following foreign countries which contribute to the Station or have supplied the Station with material for breeding purposes :—

Guadeloupe and Martinique:—

B.4362, B.43229, B.43337, B.43391, B.4425, B.44341, B.4502, B.4503, B.4504, B.4506, B.4530, B.4534, B.4553, B.4556, B.4572, B.4581, B.4596, B.45137, B.45151, B.45152, B.45156, B.45188, B.45224, B.45267, B.45270, B.4604, B.4681, B.4691, B.4692, B.46102, B.46136, B.46144, B.46223, B.46232, B.46284, B.46288, B.46297, B.46364, B.46397.

The Dominican Republic :—

B.3439, B.37161, B.4098, B.41211, B.41227, B.43337, B.43391, B.44341.

British Honduras :—

B.3337, B.34104, B.37161, B.4098, B.41211, B.41227.

Venezuela :—

B.4098, B.41211, B.41227, B.43391, B.44341.

Argentine:—

B.3439, B.34104, B.37161, B.37172.

United States of America :—

B.3337, B.3439, B.35187, B.4362, B.43337, B.43391, B.44341.

IV. PERFORMANCE OF SEEDLINGS IN CONTRIBUTING COLONIES

BARBADOS

The 1949 crop in Barbados was a record one in so far as the yield per acre is concerned. It is true that the total crop in 1939 was some 3,500 tons larger, but this was due to the fact that in 1939 approximately 1,800 acres more cane were cut than in 1949. The total rainfall for the period January 1948 to March 1949 was some nine inches above the average, but the distribution was excellent, except for one very wet spell about the end of November, when there was more water available than the soil could absorb. The rains ceased abruptly at the end of December, and the weather remained very dry until about the middle of

June. There can be no doubt that if normal rains had been received in January, February and March, the crop would have been better still.

The main variety cut during the 1949 crop was B.37161, and this occupied 92.76% of the total acreage under cane. This percentage is far too high for any one variety, as, should there be any serious outbreak of disease in this variety, not only would the industry be faced with disaster, but the whole economy of the island, based as it is on sugar, would be completely upset. B.4098 was the next most important variety occupying 4% of the area cut. Small areas of B.41211 and B.41227 were also planted, and these varieties performed extremely well on the whole. B.41211 is suitable for planting in all ecological categories while B.41227 is best suited to areas of intermediate and high rainfall where arrowing does not seriously limit cane growth.

The variety percent. acreage figures for the 1949 crop are given below :—

Variety	*Per cent of Total Area Cut*
B.2935	0.09
B.H.10(12)	0.33
B.726	0.15
B.3439	0.12
B.34104	0.32
B.35187	0.98
B.37161	92.76
B.38155	0.04
B.4098	4.14
B.40102	0.02
B.40105	0.05
B.41211	0.58
B.41227	0.14
Mixed and Others ..	0.28

BRITISH GUIANA

B.34104, Co.421, D.14/34 and Diamond 10 appear to be the most outstanding varieties in British Guiana. P.O.J.2878, which, until a few years ago, was the most popular variety, is now going rapidly out of cultivation, and has been replaced to a large extent by B.34104, Co.421 and D.14/34. The acreage under Diamond 10 is also shrinking considerably, but this variety will probably appear in the table for many years yet.

B.34104 and Co.421 have been included in all experiments as standard commercial varieties for comparison purposes. B.34104 gave disappointing results in many of the trials reaped in 1948, and this is considered to have been due to the rather unusual weather conditions. This variety is also much liked by rats, which is another complicating factor in the relatively small trial plots. B.34104 is known to be capable of giving heavy yields of cane and a juice of good quality. Co.421 has given larger yields of cane but poorer juices than the best of its competitors. The varieties B.37161, B.41211, B.3337, B.37193, B.3439 and B.35187 have all been included in trials. B.37161 has shown sufficient promise for nurseries of this variety to be established on the plantations, while B.41211 gave a very satisfactory yield of cane in three of the trials in which it was included, but the juice quality appears to be variable. B.3337 and B.37193 are to be tested further, while B.3439 and B.35187 are to be discarded. B.41227 has performed well as plant cane in the trials in which it has been included. B.4098 gave a very satisfactory yield of plant cane and sugar in the one trial in which it appeared, and it is anticipated that

its performance generally in British Guiana will be very good. Of the B.43′ series, B.43253 appears to be the best under British Guiana conditions. While the yield of cane was not outstanding, the juice quality was so good that this more than made up for the poorer yield. This result was obtained from a single plant cane trial, but should this cane continue to perform in this way, it may well pay the industry to sacrifice some tonnage for such outstanding juice quality.

The variety per cent. acreage figures for the 1948 crop are given in the Table below:—

Variety	*Percent. of Total Acreage*
Diamond 10	14.4
P.O.J.2878	13.6
Co.419	8·2
Co.421	19.3
D.14/34	17.4
D.166/34	0.5
D.200/36	1.9
B.34104	22.6
Others	2.1
	100.0

ANTIGUA

Twenty varieties have been under trial in Antigua on ten major soil types. These varieties represent seedlings of series up to and including the B.43′ series. B.34104 has been found to be inferior to B.37161, B.37172 and B.4098 on all soil types, and is no longer recommended for commercial planting. B.37161 remains the standard variety on Blubber Valley light loams, the Tomlinson clays and the Ffryes clays. B.37172 is being recommended for the Blubber Valley light loams, heavy loams and clays, and for the Bendal clays. B.4098 has performed exceedingly well on all soil types. It is being recommended for planting on a large scale, and is the only variety recommended for planting on five of the soil types. B.40116 has shown some promise on four of the seven soil types on which it is under trial, viz., Fitches, Gunthorpe, Tomlinson and Otto clays. B.4110 and B.41211 have not shown up well in Antigua, and have been consistently inferior to the standard varieties on all soil types on which they have been tried, while B.41227 has shown promise only on the Blubber Valley light loams. Of the B.42′ series, B.4214 and B.42231 have shown some promise on three of the soil types on which they have been tried. B.42279 has been consistently inferior to the standard varieties. Of the B.43′ series, B.4306 has shown promise only on the Tomlinson clays, B.43235 only on the Blubber Valley heavy loams and clays and B.43337 only on the Wetherell clays. B.4362 and B.43391 have both been consistently disappointing in Antigua. Table I below gives the variety — acreage figures for the 1949 crop, while Table II gives the planting recommendations for the 1949 planting season.

TABLE I

Variety	*Percent. of Total Acreage*
B.37161	55.19
B.4098	24.16
B.3439	7.65
B.34104	9.20
B.37172	3.07
Others	0.73

TABLE II

Soil Type	Percentage of Ploughed Area		
	B.4098	B.37161	B.37172
Wetherell Clays	100	—	—
Fitches Clay	100	—	—
Blubber Valley light loans .	34	33	33
Gunthorpe Clays	100	—	—
Tomlinson Clays	50	50	—
Lindsey Clays	100	—	—
Otto Clays	50	50	—
Blubber Valley Clays ..	50	—	50
Bendal Clays	80	—	20

ST. KITTS

Varieties of series up to and including the B.43' series have been under trial in St. Kitts. in comparison with the standard variety B.37161, which occupied 93% of the area reaped during the 1949 crop.

B.3337 has given heavy yields of plant and ratoon cane but juice of very inferior quality. In view of its capacity to give satisfactory ratoon yields under difficult conditions, it may be useful on steeply sloping hillsides where cane ripens rapidly but ratoons poorly. B.3439 has been found to be inferior to B.37161 on the drier lower lands. B.34104 has given larger yields of plant and ratoon cane than B.37161 on the upper wetter lands. It has been recommended that it should be planted on about half of these lands and on certain fields of the middle lands of intermediate and high rainfall. B.35187, B.37172 and B.38212 have been found to be inferior to the standard. B.4098 has generally given larger plant and ratoon yields than B.37161 where it does not uproot. Uprooting in the case of B.4098 is generally followed by the death of the plant, and it cannot be recommended for this reason. B.41211 has performed exceedingly well in all trials — except one, in which the canes were eaten by labourers — in all rainfall areas of the lower lands. It is also promising in the middle and upper lands. As will be seen from the planting recommendations, it is being recommended for planting on up to 20 percent. of the ploughed area in the lower lands and 5 percent on each of the middle and upper lands. B.41227 has shown some promise on the middle lands of high rainfall and on the upper lands of high and intermediate rainfall. It has been recommended that nurseries of this variety should be established in these areas. B.4110, B.4145 and B.41228 have proved to be inferior to the other varieties under trial.

B.4362 has shown much promise as a plant cane on the lower and middle lands. It has an excellent juice, and appears to be the most promising of the B.43' series. Nurseries of this variety have been recommended for all rainfall zones in the lower, middle and upper lands. B.43330, B.43337 and B.43391 have given poorer plant cane yields than the standard variety, B.41211, B.41227 and B.4362 on lower lands of dry and intermediate rainfall and middle lands of intermediate and high rainfall. B.43391 has given greatly inferior yields of plant cane and sugar to B.41227 on the upper lands of high rainfall.

Table I below gives the variety-acreage figures for the 1949 crop, while Table II gives the planting recommendations for the 1949 planting season.

TABLE I

Variety	*Percent. of Total Acreage*
B.37161	92.93
B.34104	3.28
B.3439	0.12
B.35187	0.52
B.2935	0.31
B.4098	0.46
B.41211	0.38
B.38212	0.06
B.3337	0.06
Mixed	1.88

TABLE II

Ecological Area		Recommended Varieties %				
Elevation	Rainfall	B.37161	B.41211	B.34104	B.41227	B.4362
Lower Lands ..	Low ..	80	20	—	—	Nurseries
	Intermediate	80	20	—	—	do
	High ..	80	20	—	—	do
Middle Lands ..	Low ..	95	5	—	—	Nurseries
	Intermediate	90	5	5	—	do
	High ..	90	5	5	Nurseries	do
Upper Lands ..	Low ..	95	5	—	—	Nurseries
	Intermediate	90	5	5	Nurseries	do
	High ..	50	5	45	do	do

TRINIDAD

Very little varietal work has been done within the past few years due to the fact that there was no Sugar Agronomist to carry out the work. The services of a Sugar Agronomist have now been obtained and it is expected that a full programme of work will be resumed in the near future.

B.37161, B.34104, B.3337 and B.37172 are the four varieties which have shown most promise under Trinidad conditions during the past few years. For the 1948 crop, B.34104 was the dominant variety, but, in some areas, there appears to be a swing in favour of B.3337, as this variety ratoons exceptionally well, can stand up to fairly hard conditions, and appears to recover quickly from froghopper attack.

Of the varieties of later series, B.4098 shows some promise on certain soil types both as plant cane and ratoons. B.41227 has given a very satisfactory yield of plant cane in the one trial in which it was included but, unfortunately, no juice quality figures are available for this trial. B.4145 and B.42231 have given a better than average yield of plant cane and sugar in a single trial but were not superior to B.37161 or B.37172 on sugar.

The variety-acreage figures for the 1949 crop are given in the Table below:—

Variety	*Percent. of Total Acreage*
B.34104	45.35
B.3337	23.01
B.37161	15.14
B.37172	9.41
B.H. 10 (12)	1.87
Co.213	2.04
B.4098	0.77
Co.421	0.25
Co.419	0.10
B.37193	0.08
P.O.J.2878	0.14
B.3439	0.04
B.38192	0.06
Mixed	1.62
Others	0.12

JAMAICA

The variety position in Jamaica is affected to a large extent by the high incidence of mosaic disease. The dominant variety being grown at present is B.34104, but while this variety gives heavy yields of cane and sugar, it is very susceptible to mosaic disease, although it appears to display a high degree of tolerance to it. With a large percentage of the cultivation under this variety, the sugar interests are quite naturally rather anxious, as there is always the possibility that the variety will succumb to the ravages of the disease at some future date. The variety B.41227 is, to all intents and purposes, immune to mosaic disease in Jamaica, and it was recommended in 1947, that direct comparisons be made with this variety and B.34104. The results of the trials to date indicate that while the cane yields of B.41227 are quite satisfactory, the juice quality was not as good as that of B.34104. B.3439, although a noble cane, appears to have resistance to mosaic disease which is sufficient for commercial purposes. It gives heavy yields of plant cane, but under some conditions, difficulty is experienced in obtaining a good ratoon stand. The greatest advantage of this variety is that it has a good juice early in the crop season. B.37172 has a high degree of resistance to mosaic disease, and gives good juices. However, it appears to be at its best only under the growing conditions obtaining in the east and north-east of the island . Many of the varieties of the B.40′ series gave excellent yields of cane and sugar but, unfortunately, they all proved to be susceptible to mosaic disease and were discarded for this reason. B.37161 is cultivated to some extent in Jamaica but, like B.34104, it appears to be susceptible, though tolerant, to mosaic. The yields are reported to be no better than those of B.34104.

Two varieties of the later series B.42231 and B.4362 are reported to be resistant to mosaic disease and to show promise in preliminary trials. Little is known in Barbados about B.42231, but it is known that B.4362 has an outstanding juice and is capable of giving heavy yields of plant and ratoon cane. However, under Barbados conditions, arrowing is too profuse for this variety to be at its best.

The variety percent. acreage figures for the 1949 crop are given in the Table below:—

Variety	Percent. of Total Acreage
P.O.J.2727	1
P.O.J.2878	6
F.C.916	1
M.28	2
B.H.10(12)	6
B.3439	20
B.34104	47
B.37161	2
B.37172	4
Mixed and Others ..	11

V. A NOTE ON THE LEAF SYMPTOMS DISPLAYED BY B.43391

Early in October, 1948, it was observed that B.43391 was displaying a curious leaf-mottling symptom which was very suggestive of mosaic disease. There were 678 stools of this variety at Codrington in the multiplication plots, every stool of which displayed the symptoms and these were immediately destroyed. Six of the stools were dug up, brought to the office and planted in the isolation plot behind the laboratory. These have since sprung again, and the new shoots are a normal green and free of any mottling. A complete inspection of all multiplicatiion plots at Codrington failed to reveal a single case of mosaic disease.

At the same time as the stools of B.43391 were destroyed, six shoots displaying the most marked symptoms were brought to the office, the juice was expressed in a small hand mill, and this was used to inoculate 50 healthy Ba.11569 cuttings by the suction technique. These were then planted in pots along with 50 uninoculated cuttings of healthy Ba. 11569. On the 6th December, the latter were inoculated with B.43391 material by the Sein technique. The plants in the pots were given a dressing of sulphate of ammonia and watered regularly. More than seven weeks after the last inoculation was done, none of the Ba.11569 plants had shown mosaic symptoms. It can therefore be reasonably assumed that the symptoms displayed by B.43391 were not the expression of a mosaic disease virus.

VI A NOTE ON MOSAIC DISEASE

An attempt was made to increase the virulence of the local mosaic disease strain by passing it through *Sorghum vulgare*. A small plot of sorghum was established in the isolation plot at the office, and the plants were inoculated with mosaic by the Sein method. In about two weeks many of the sorghum plants were showing the symptoms of the disease, which appeared as large irregular whitish blotches. Leaves and stems of the infected plants were cut, the juice was expressed by a small cane mill, and this was used to inoculate single eye cuttings of the B.46' and that half of the B.45' Series which had not previously been tested for mosaic. The suction technique was employed, and five cuttings of each seedling were inoculated. After ten weeks, none of the seedlings showed any mosaic symptoms, so they were all reinoculated by the Sein method, making use of B.34104 infective material which had been collected at Hillaby.

At the same time that the seedlings received their first inoculation, 20 cuttings of the susceptible variety B.H.10(12) were inoculated with the expressed juice of the stalks and leaves of infected sorghum plants to serve as a control. None of these plants showed any symptoms of the disease after ten weeks.

At the same time also, 20 cuttings of Ba.11569 were inoculated with juice from the stalks of infected sorghum plants which had been crushed in a meat grinder, while another 20 cuttings were inoculated with the juice from infected leaves of the sorghum expressed in a similar manner. In neither case did any of the plants show any mosaic disease symptoms after ten weeks. These plants together with the B.H.10(12) plants mentioned above were all inoculated a second time by the Sein technique with B.34104 infective material.

Unfortunately, the seedlings and control plants had to be destroyed three weeks after the second inoculation, but during that time one plant of B.4547 showed the symptoms as well as seven plants of Ba.11569.

It is quite obvious that either something is seriously wrong with our technique or that the Barbados strain of mosaic is losing its virulence. The Sein technique is the same as that used from the start of this work, except perhaps that the needle size is rather larger, as it was found that the needles which had been reduced in size often broke, and necessitated delays in the work until new needles could be rubbed down to the correct size. Should needle size be a factor, it may be possible to obtain needles of the required size direct from the manufacturers. Reducing the size of a steel needle on a hone is a tedious business, and one that requires considerable skill. The needle is liable to break if care is not exercised, and flat sides or bulbous points are easily obtained if too much pressure is applied.

During the coming season it is proposed to test the effect of needle size on the transmission of mosaic making use of a susceptible variety. The seedlings of the B.47′ Series will be tested for mosaic disease resistance as usual, but the needles used will be as fine as possible.

VII. STATEMENT OF EXPENDITURE FOR 1948—49.

1.	Personal Emoluments	$ 11,257.20
2.	Provident Fund	594.00
3.	Seedling Trials	13,962.22
4.	Stationery and Library	585.00
5.	Travelling	2,492.59
6.	Incidentals	465.72
7.	Capital	3,148.99
	Total	$ 32 505.72

APPENDIX I

Sugar Cane Breeding, Seedling Raising, B.51′ Series Field Nursery and B.s.50′ Series First Year Seedling Trial Planting

Details of Crosses made, their Germinations, Numbers Potted and Numbers Planted in the Field Nursery and/or B.s. 50′ First Year Seedling Trial.

Cross	Group	No. Germinated Nov: 1948 to Jan' 1949	No. Potted Jan. to March 1949	No. Planted in Field Nursery May 1949	No. Planted in B.s. 50′ Series First Year Seedling Trial May 1949
	S. officinarum x S. spontaneum				
B.41104 x B.39246	2nd Nobilisation Dacca	800	200	160	—
B.44132 x Ba.6032	2nd Nobilisation Glagah	40	40	32	—
B.38272 x B.603	3rd Nobilisation Glagah	—	—		
B.3439 x B.3337	4th Nobilisation Glagah	6,000	150	137	—
		6,840	390	329	—
	S. officinarum x S. barberi				
B.3365 x B.603	3rd Nobilisation Chunnee	300	300	175	—
	S. officinarum x S. robustum				
B.4457 x B.603	3rd Nobilisation Robustum	260	260	184	—
B.4587 x B.603	„ „ „	240	240	173	—
		500	500	357	—
	S. officinarum x S. Sinense				
B 3439 x B.35269	2nd Nobilisation Sinense	50	50	38	—
B.39254 x B.3915	3rd Nobilisation Sinense	—	—		
		50	50	38	—
	S. officinarum x S. barberi x S. spontaneum				
B.3365 x B.34104	Noble x Chunnee x Local	580	580	455	99
B.3439 x B.4510[5]	„ x „ x „	6	6	6	—
B.3439 x Co.290	„ x „ x „	1,000	1,000	662	200
B.35206 x B.34104	„ x „ x „	4,000	200	162	—
B.35207 x B.34104	„ x „ x „	500	350	300	—
B.35207 x B.4098	„ x „ x „	400	250	200	—
B.37161 x B.34104	„ x „ x „	800	600	559	—
B.37161 x B.4098	„ x „ x „	350	350	150	—
B.37161 x Co.290	„ x „ x „	700	500	416	—
B.39240 x B.34104	„ x „ x „	65	63	50	—
B.4092 x B.37193	„ x „ x „	60	60	49	—
B.4094 x B.37193	„ x „ x „	160	160	150	—
B.3365 x B.37164	Noble x Chunnee x Glagah	600	600	583	—
B.3365 x B.41203	„ x „ x „	70	66	66	—
B.3439 x B.37175	„ x „ x „	800	500	217	200
B.35206 x P. O. J. 2878	„ x „ x „	450	450	399	—
B.35207 x P. O. J. 2878	„ x „ x „	1,500	1,200	927	100
B.37161 x B.3337	„ x „ x „	500	400	350	—
B.37161 x P. O. J. 2878	„ x „ x „	170	170	120	—
B.37172 x B.37193	„ x „ x „	6,000	300	269	—
B.38203 x B.603	„ x „ x „	70	70	69	—
B.38233 x B.603	„ x „ x „	119	119	114	—

APPENDIX I—*Continued*

Cross	Group	No. Germinated Nov. 1948 to Jan. 1949	No. Potted Jan. to March 1949	No. Planted in Field Nursery May 1949	No. Planted in B.s. 50' Series First Year Seedling Trial May 1949
B.4145 x B.37193 ..	Noble x Chunnee x Glagah .	2.500	500	448	—
B.42304 x B.37193 ..	„ x „ x „ ..	9.000	400	268	—
B.4362 x B.40175 ..	„ x „ x „ ..	150	150	144	—
Co.421 x B.37193 ..	„ x „ x „ ..	300	300	270	—
Co.421 x B.41227 ..	„ x „ x „ ..	800	700	567	100
B.35247 x B.40175 ..	Noble x Celebes x Chunnee	5.600	250	233	—
B.37161 x B.39274 ..	„ x „ x „ ..	500	200	188	—
B.3439 x B.38192 ..	Noble x Local x Chunnee x Glagah .	1,550	1,000	900	—
B.3439 x B.4226 ..	„ x „ x „ ..	6,000	150	—	67
B.3439 x B.42231 ..	„ x „ x „ ..	3,500	600	430	99
B.3439 x Co.419 ..	„ x „ x „ ..	180	180	163	—
B.34102 x B.34104 ..	„ x „ x „ ..	3,000	600	558	—
B.37161 x Co.419 ..	„ x „ x „ ..	300	300	215	—
B.37172 x B.34104	„ x „ x „ ..	1,000	550	374	100
B.37172 x B.4098	„ x „ x „ ..	200	150	132	—
B.37172 x Co.290 ..	„ x „ x „ ..	600	500	440	—
B.38203 x B.34104 ..	„ x „ x „ ..	1,200	500	377	97
B.38203 x B.41211 ..	„ x „ x „ ..	4,000	200	184	—
B.38233 x B.34104 ..	„ x „ x „ ..	800	500	256	200
B.38233 x B.41211 ..	„ x „ x „ ..	3.000	500	384	100
B.4096 x B.35187 ..	„ x „ x „ ..	30	30	12	—
B.40105 x B.35187 ..	„ x „ x „ ..	—	—	—	—
B.4111 x B.34104 ..	„ x „ x „ ..	5,000	400	328	—
B.4111 x B.4098 ..	„ x „ x „ ..	600	500	384	—
B.4145 x B.34104 ..	„ x „ x „ ..	800	500	277	200
B.4145 x B.4098 ..	„ x „ x „ ..	2,100	1,500	1,022	300
B.4145 x B.4226 ..	„ x „ x „ ..	300	290	197	—
B.4145 x B.42114 ..	„ x „ x „ ..	400	300	234	—
B.4145 x B.42231 ..	„ x „ x „ ..	800	500	416	—
B.4145 x Co.281 ..	„ x „ x „ ..	—	—	—	—
B.4145 x Co.419 ..	„ x „ x „ ..	200	200	94	—
B.42304 x B.4098 ..	„ x „ x „ ..	400	390	377	—
B.4362 x B.34104 ..	„ x „ x „ ..	2,000	350	338	—
B.4362 x B.41211 ..	„ x „ x „ ..	900	200	175	—
B.44261 x B.603 ..	„ x „ x „ ..	—	—	—	—
B.45170 x B.41227 ..	„ x „ x „ ..	2,400	600	310	199
B.45258 x B.H.10(12 ..	„ x „ x „ ..	—	—	—	—
Co.421 x B.34104 ..	„ x „ x „ ..	2,400	1,200	531	100
Co.421 x B.4098 ..	„ x „ x „ ..	700	500	220	100
B.35197 x B.41227 ..	Noble x Chunnee x Glagah x Celebes	960	400	329	—
B.35247 x B.41227 ..	„ x „ x „ ..	2,000	600	577	—
B.4362 x B.39156 ..	„ x „ x „ ..	30	30	—	—
B.4362 x B.39274 ..	„ x „ x „ ..	600	400	337	—
B.4362 x B.43391 ..	„ x „ x „ ..	40	40	32	—
B.35197 x B.34104 ..	Noble x Chunnee x Local x Celebes	1,400	600	385	200
B.35247 x B.34104 ..	„ x „ x „ ..	5,000	500	488	—
B.39157 x Co.290 ..	„ x „ x „ ..	20	20	11	—
B.43380 x B.603 ..	„ x „ x „ ..	—	—	—	—
B.35197 x B.42231 ..	Noble x Chunnee x Glagah x Local x Celebes	3,000	300	297	—
B.44261 x B.39156 ..	„ x „ x „ x	300	300	260	—
		95,460	26,874	20,435	2,461

APPENDIX I—*Continued*

Cross	Group	No. Germinated Nov. 1948 to Jan: 1949	No. Potted Jan.-March 1949	No. Planted in Field Nursery May 1949	No. Planted in B.s. 50' Series First Year Seedling Trial May 1949
	S. officinarum x S. spontaneum x S. spontaneum				
B.3439 x B.40255 ..	Noble x Local x Glagah ..	320	300	278	—
B.37172 x B.41211 ..	„ x „ x „ ..	500	490	476	—
B.4145 x B.41211 ..	„ x „ x „ ..	600	600	537	—
Co.421 x B.41211 ..	„ x „ x „ ..	5,700	1,200	840	300
B.34102 x B.3337 ..	Noble x Glagah x Glagah ..	600	200	165	—
B.35197 x B.3337 ..	Noble x Glagah x Celebes ..	420	334	200	—
B.35247 x B.3337 ..	„ x „ x „ ..	3,000	600	580	—
B.37172 x B.43337 ..	„ x „ x „ ..	240	150	116	—
		11,380	3,874	3,192	300
	S. officinarum x S. barberi x S. spontaneum x S. sinense				
B.39207 x B.40270 ..	Noble x Chunnee x Glagah x Sinense	—	—	—	—
B.39254 x B.37175 ..	„ x „ x „	3,500	800	750	—
B.40272 x B.37193 ..	„ x „ x „	15	15	14	—
B.37172 x B.45266 ..	Noble x Chunnee x Glagah x Local x Sinense ..	80	80	78	—
B.40272 x Co.290 ..	„ x „ x „ ..	3,000	500	282	200
B.44341 x B.3337 ..	„ x „ x „ ..	350	300	197	—
B.45220 x B.4098 ..	„ x „ x „ ..	120	120	107	—
C.H.64/21 x B.4098 ..	Noble x Chunnee x Local x Sinense .. .	330	300	278	—
		7,395	2,115	1,706	200
	S. officinarum x S. spontaneum x S. sinense				
B.3439 x B37261 ..	Noble x Glagah x Sinense	80	76	73	—
B.3439 x B.40270 ..	„ x „ x „ ..	4	—	—	—
B.4145 x B.35269 ..	„ x „ x „ ..	12	12	10	—
B.40272 x B.41211 ..	Noble x Glagah x Local x Sinense	3,560	190	183	—
		3,656	278	266	—
	S. officinarum x S. spontaneum x S. Robustum				
B.37172 x B.4454 ..	Noble x Glagah x Robustum	400	250	204	—
B.4588 x P.O.J.2878 .	„ x „ x „ ..	—	—	—	—
		400	250	204	—

APPENDIX I—*Concluded*

Cross	Group	No. Germinated Nov. 1948 to Jan. 1949	No. Potted Jan.-March 1949	No. Planted in Field Nursery May 1949	No. Planted in B.s. 50' Series First Year Seedling Trial May 1949
	S. officinarum x S. barberi x S. robustum				
61 x B.4454 ..	Noble x Chunnee x Robustum	25	18	17	—
	S. officinarum x S. barberi x S. spontaneum x S. robustum				
36 x B.4098 ..	Noble x Chunnee x Local .. x Robustum	500	200	160	—
3 x Co.419 ..	Noble x Chunnee x Local x Glagah x Robustum ..	—	—	—	—
		500	200	160	—
	S. officinarum x S. barberi x S. sinense x S. spontaneum x S. robustum				
341 x 32M.Q.135..	Noble x Chunnee x Glagah x Local x Sinense x Robustum	—	—	—	—
	GRAND TOTALS ..	126,506	34,849	26,879	2,961

APPENDIX II

Sugar Cane First Year Seedlings—B.50' Series

List of Crosses and the Number of Seedlings of each Planted in the Field Nursery (May 1948) and in the First Year Seedling Trial (October 1948)

Cross	Group	No. Planted in Field Nursery	No. Planted in First Year Seedling Trial
	S. officinarum x S. spontaneum		
B.3439 x B.40123 ..	Noble x Local	345	180
B.35247 x B.4327 ..	Noble x Celebes x Glagah	219	56
		564	236
	S. officinarum x S. barberi		
B.3439 x B.40175 ..	Noble x Chunnee	238	120
	S. officinarum x S. barberi x S. spontaneum		
B.3365 x B.34104 ..	Noble x Chunnee x Local	259	135
B.35207 x B.34104 ..	„ x „ x „	230	120
B.3365 x B.4098 ..	„ x „ x „	428	250
B.45170 x B.4098 ..	„ x „ x „	733	350
B.35218 x B.4098 ..	„ x „ x „	403	200
B.45166 x B.H.(10(12)	„ x „ x „	120	60
B.3439 x B.45236 ..	„ x „ x „	397	200
B.45102 x B.H.10(12)	„ x „ x „	207	99
B.39240 x B.4098 ..	„ x „ x „	33	20
B.37194 x B.4098 ..	„ x „ x „	40	20
B.35206 x B.34104 ..	„ x „ x „	29	20
B.3439 x Co.290 ..	„ x „ x „	123	95
B.37161 x B.34104 ..	„ x „ x „	12	10
B.37161 x B.4098 ..	„ x „ x „	4,710	3,224
B.35197 x B.34104 ..	Noble x Chunnee x Local x Celebes	1,188	600
B.35247 x B.34104 ..	„ x „ x „ x „ ..	980	500
B.35197 x B.4098 ..	„ x „ x „ x „ ..	588	300
B.35247 x B.4098 ..	„ x „ x „ x „ ..	797	430
B.35247 x B.40118 ..	„ x „ x „ x „ ..	215	100
Co.421 x B.41227 ..	Noble x Chunnee x Glagah	340	200
B.3439 x B.37175 ..	„ x „ x „	19	15
B.4362 x B.H.10(12)	„ x „ x „	8	5
B.35197 x B.41227 ..	Noble x Chunnee x Glagah x Celebes	128	80
B.35247 x B.41227 ..	„ x „ x „ x „ ..	600	300
Co.421 x B.45109 ..	„ x „ x „ x „ ..	340	200
B.35247 x B.37175 ..	„ x „ x „ x „ ..	38	25
P.O.J.2364 x B.34104	Noble x Chunnee x Glagah x Local ..	79	50
B.38233 x B.34104 ..	„ x „ x „ x „ ..	309	120
B.38203 x B.34104 ..	„ x „ x „ x „ ..	396	250
P.O.J.2364 x B.4098 ..	„ x „ x „ x „ ..	239	150
B.45186 x B.4098 ..	„ x „ x „ x „ ..	372	200
B.34117 x B.4098 ..	„ x „ x „ x „ ..	230	150
B.45170 x P.O.J. 2878	„ x „ x „ x „ ..	43	25
B.35218 x P.O.J.2878	„ x „ x „ x „ ..	20	10
B.35218 x B.38281 ..	„ x „ x „ x „ ..	22	10
B.38233 x B.4098 ..	„ x „ x „ x „ ..	444	250
B.38203 x B.4098 ..	„ x „ x „ x „ ..	123	60
B.45170 x B.4306 ..	„ x „ x „ x „ ..	15	10
B.45170 x B.37175 ..	„ x „ x „ x „ ..	13	9
B.41277 x B.4098 ..	„ x „ x „ x „ ..	36	20
B.34102 x B.34104 ..	„ x „ x „ x „ ..	699	361
B.37172 x B.34104 ..	„ x „ x „ x „ ..	36	25
B.37172 x B.4098 ..	„ x „ x „ x „ ..	8	5
B.38212 x B.4098 ..	„ x „ x „ x „ ..	193	100
B.4362 x B.4098 ..	„ x „ x „ x „ ..	240	150

APPENDIX II—*Concluded*

Cross	Group	No. Planted in Field Nursery	No. Planted in First Year Seedling Trial
Co.421 x B.43290 ..	Noble x Chunnee x Glagah x Local x Celebes	634	285
Co.421 x B.43375 ..	„ x „ x „ x „	938	500
B.43349 x B.4098 ..	„ x „ x „ x „	139	80
		18,193	10,378
	S. officinarum x S. spontaneum x S. sinense		
B.3439 x B.45116 ..	Noble x Glagah x Sinense	165	80
B.40272 x B.44237 ..	Noble x Glagah x Celebes x Sinense	337	90
		502	170
	S. officinarum x S. barberi x S. spontaneum x S. sinense		
B.39254 x B.4098 ..	Noble x Chunnee x Local x Sinense	77	40
B.3439 x B.4543 ..	Noble x Chunnee x Glagah x Sinense	250	102
B.40272 x B.4098 ..	Noble x Glagah x Local x Chunnee x Sinense	37	25
B.40272 x Co.281 ..	„ x „ x „ x „	379	282
B.45220 x B.4098 ..	„ x „ x „ x „	246	100
B.40272 x Co.290 ..	„ x „ x „ x „	55	40
		1,044	589
	S. officinarum x S. spontaneum x S. robustum		
B.44233 x B.4327 ..	Noble x Glagah x Robustum	235	120
B.4457 x B.4327 ..	„ x „ x „ x „	200	100
		435	220
	S. officinarum x S. barberi x S. robustum		
B.3365 x B.4454 ..	Noble x Chunnee x Robustum ..	120	63
	S. officinarum x S. barberi x S. spontaneum x S. robustum		
B.4587 x B.4098 ..	Noble x Chunnee x Local x Robustum	60	40
B.45223 x B.4098 ..	„ x „ x „ x „	478	231
B.4457 x Co.419 ..	Noble x Chunnee x Glagah x Local x Robustum	60	40
C.P.36-158 x B.4098	„ x „ x „ x „	44	25
B.4373 x B.4454 ..	„ x „ x „ x „	28	10
		670	346
	Grand Totals	21,766	12,122

APPENDIX III

CENTRAL SUGAR CANE BREEDING STATION BRITISH WEST INDIES

ADVISORY COMMITTEE

SIXTEENTH MEETING — ANTIGUA

October 3rd & 5th, 1949

The following members of the Committee attended:

Barbados	Dr. S. J. Saint, C.M.G., O.B.E. (Chairman).
Imperial College of Tropical Agriculture	Mr. H. J. Page, O.B.E., Principal.
British Guiana	Mr. R. R. Follett-Smith, Director, B.W.I. Sugar Association (Incorporated).
Jamaica	Mr. A. C. Barnes, C.M.G., Director of Research, Sugar Manufacturers' Association (of Jamaica) Ltd.
Leeward Islands	Mr. R. B. Allnutt, Director of Agriculture.
Trinidad	Mr. E. M. Leach, Director of Agriculture.
Windward Islands	Mr. C. C. Skeete, O.B.E., Director of Agriculture.

The following persons also attended the meetings and took part in the discussions:—

Hon. A. Moody-Stuart, O.B.E., M.C.	Director, B.W.I. Sugar Association (Inc.)
Mr. J. C. Hotchkiss	Assistant Adviser on Agricultural Education to the Development and Welfare Organisation, British West Indies.
Mr. P. E. Turner, O.B.E..	Sugar Agronomist to the Development and Welfare Organisation.
Mr. B. deL. Inniss	Botanist, British West Indies Central Sugar Cane Breeding Station.
Mr. G. C. Stevenson ..	Cytogeneticist, British West Indies Central Sugar Cane Breeding Station.

MEETINGS

Monday,	October 3 ..	Morning.	Meeting of Committee.
		Afternoon.	Meeting of Committee.
Wednesday,	„ 5 ..	Morning.	Meeting of Committee.

242. Dr. Saint informed the Committee that his retirement as Director of Agriculture, Barbados, dated from 30th September last so that he was not entitled to act as Chairman. For various reasons, the Barbados administration had thought it desirable for him to take the chair at this meeting and, accordingly, a telegram had been sent to all contributing colonies explaining the position and asking for confirmation. No objections had been received.

243. The following resolution was proposed by Mr. Page, seconded by Mr. Barnes, and unanimously adopted:

> "This Committee learn with great regret that the Chairman's period of office expires with this meeting, upon his retirement as Director of Agriculture, Barbados. They wish to record in the warmest possible terms their high appreciation of Dr. Saint and his work and of the great services which he has rendered to the British West Indies sugar industry, both in his

capacity as Director of Agriculture, Barbados, and as Chairman of this Committee.

It is therefore hereby resolved to amend the constitution of this Committee, as laid down in Minute No. 167, by the addition to its membership of Dr. S. J. Saint, C.M.G., O.B.E., for so long as he holds the post of Director of the Sugar Technology Laboratories of Barbados; and he is accordingly cordially invited to accept membership of this Committee on that basis."

PROCEEDINGS OF THE COMMITTEE

The proceedings of the Advisory Committee were as follows:—

PROGRESS REPORT ON THE WORK OF THE STATION

244. The Botanist submitted a progress report on the work of the Station for the period 1st October, 1948, to the 30th September, 1949, together with the proposed breeding programme for 1949. The Committee noted, with interest, that some of the inter-specific crosses now being made include six different forms of the genus *Saccharum*.

245. The Committee decided that breeding work with *Saccharum robustum* which tends to produce seedling canes with a hollow or pithy centre should be continued since this species of *Saccharum* also transmits considerable vigour to its progeny.

246. The Committee noted that the Burma form of *Saccharum spontaneum* flowered this year for the first time but at a period when no other canes were in flower. In this connection, the Committee discussed the question of preserving the viability of pollen from sugar cane and other methods of obtaining crosses with this form of *Saccharum spontaneum*. The Committee recommended that work on these subjects should be carried out.

247. The Committee expressed its satisfaction that good progress was being maintained.

PERFORMANCE OF SEEDLINGS IN CONTRIBUTING COLONIES

248. The Botanist submitted a report on the performances of varieties grown in Barbados, and Mr. P. E. Turner reported on the performances of varieties in Antigua, St. Kitts, Trinidad, British Guiana, Jamaica, St. Lucia and Grenada.

249. With reference to Minutes 224 and 225, the Botanist informed the Committee that exhaustive tests had been made with material from B.43391 shoots showing symptoms suggestive of mosaic disease. The tests provided no evidence that these symptoms were caused by a mosaic virus.

TESTING OF VARIETIES IN CONTRIBUTING COLONIES

250. In accordance with Minute 229, the Chairman stated that he had received from the various contributing colonies, details of the methods which are now in use for the testing of varieties. The Cytogeneticist presented this material together with his recommendations for the co-ordination of this work.

251. The Committee decided that critical consideration of and final recommendations regarding these matters would properly come within the terms of reference of the B.W.I. Sugar Cane Investigation Committee which had been recently set up by the B.W.I. Sugar Association. It was accordingly decided to refer this subject to that Committee for necessary action.

THE PROGRAMME OF WORK AND PROPOSED VISITS OF THE CYTOGENETICIST FOR THE YEAR 1949-50

252. The Chairman reported that Mr. G. C. Stevenson, recently Chief Research Officer in the Department of Agriculture, British Guiana, and who had many years' experience of cane breeding in Barbados and Mauritius had been appointed as Cytogeneticist under the Colonial Development and Welfare Research Scheme No. R.275 (see Minute 237).

253. The Cytogeneticist presented a memorandum setting out his programme of work for the ensuing year and his proposed list of visits which includes the Dominican Republic, Antigua, St. Kitts, Trinidad and Jamaica.

254. The Principal of the Imperial College of Tropical Agriculture gave the Cytogeneticist a cordial invitation to visit the College at any time to discuss mutual problems with the cytogeneticists there. The invitation was gratefully accepted by the Committee and the Cytogeneticist.

255. The Committee recommended that if it could be arranged, the Cytogeneticist should visit the U.S. Cane Breeding Station at the Sugar Plant Field Station, Canal Point, Florida, on the occasion of his visit to Jamaica.

BREEDING FOR CONDITIONS IN JAMAICA

256. Mr. Barnes reminded the Committee of the serious position which exists in Jamaica with regard to mosaic disease of sugar cane. The strains of the virus in Jamaica appear to be different from those in Barbados. He had discussed this matter with the officers of the Station and it had been decided that planting material from some 500 seedling canes should be sent to Jamaica each year from the Nursery at Barbados. These varieties would be tested in Jamaica as to their resistance to mosaic disease and it is hoped that this work would assist the plant breeder and result in the more rapid production and selection of good commercial canes resistant to mosaic disease.

257. Mr. Barnes also informed the Committee that varieties for Jamaica should also be selected for the following characters :—

(a) Suitability for a growth period of 21—24 months.
(b) „ for early, mid and late crop reaping.
(c) „ for dry areas and for wet areas.
(d) „ for growing at higher altitudes.
(e) „ for cultivation by cane farmers.

258. Mr. Moody-Stuart stated that the following varietal characters were desirable for Antigua conditions:—

(a) Good juice qualities over a prolonged reaping season;
(b) Good ratooning and free trashing;
(c) A hard rind;
(d) Little or no arrowing.

PLANT QUARANTINE STATION

259. In his capacity as Chairman of the Plant Quarantine Committee, Mr. Leach informed the Committee that an application supported by the contributing colonies had been submitted by the Trinidad Government to the Development and Welfare Organization for the sum of £3,850 from the West Indies General Allocation to enable an improved type of quarantine House to be erected at the Quarantine Station.

260. The urgent necessity for the provision of such a quarantine House to enable more cane breeding material to be introduced for the use of the Cane Breeding Station has been stressed by the Committee for a number of years. The Chairman was accordingly requested to communicate with the Development and Welfare Organisation in order to expedite the provision of funds for this purpose.

FINANCE

261. The Committee considered two financial statements by the Chairman setting out the estimated expenditure for the financial year 1949-50 and the revenue from the contributing colonies for the period 1947-49.

262. With reference to the estimated expenditure, it was agreed that :—

(a) the salaries of the whole-time employees of the Station should be consolidated as follows with effect from October 1st, 1948 :—

Botanist	£670 x 30 — £1,000
Agricultural Assistants	£250 x 15 — 400 (E.B.) x 20 — 540
Statistical Clerk and Steno-typist	£100 x 10 — 240 (E.B.) x 15 — 300

(b) the subsistence allowance payable to members of the Committee and to the Botanist in respect of this and subsequent meetings shall be actual expenses for board, lodging and transport plus an allowance of 10/- per day for out of pocket expenses.

263. The Committee noted from the statement of revenue that the contributions from Jamaica for the period 1947-49 had been less than those agreed upon and that at the end of the financial year 1948—49 a sum of £1,649. 19s. 2d. was due from the Jamaica Government and £525 from the Sugar Manufacturers Association of Jamaica. Mr. Barnes stated that on his return to Jamaica he would investigate and report to the Chairman.

264. The Committee approved the appended financial statements for the financial year 1949-50.

FINANCIAL STATEMENT

(Financial year 1st October—30th September)

Item	Voted 1948-49	Estimated Expenditure 1948-49	Estimates 1949-50	Estimated Expenditure on Cane Breeding by the Barbados Government 1949-50	Estimated Total Expenditure on Cane Breeding 1949-50
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Personal Emoluments:					
Chairman	100 0 0	100 0 0	100 0 0		
Botanist	650 0 0	650 0 0	850 0 0		
Cost of Living Allowance ..	140 0 0	140 0 0			
Two Agric. Assistants	533 10 0	533 6 8	783 10 0		
Cost of Living Allowance ..	173 10 0	173 6 4			
Two part-time Agric. Assts. ..	125 0 0	125 0 0	155 0 0		
Cost of Living Allowance ..	25 10 0	25 5 0			
Clerical Assistance	50 0 0	50 0 0	60 0 0		
Cost of Living Allowance ..	6 10 0	6 5 0			
Statistical Clerk ..	184 10 0	184 7 6	281 10 0		
Cost of Living Allowance ..	65 10 0	65 6 3			
Steno-Typist ..	200 0 0	121 17 6	177 10 0		
Consolidation of salaries of permanent staff in accordance with recommendations of Mr. Adams' Commission ..	100 0 0	170 10 9			
	2,354 0 0	2,345 5 0	2,407 10 0	2,990 0 0	5,397 10 0
Provident Fund ..	200 0 0	123 15 0	210 0 0	—	210 0 0
Seedling Trials ..	3,350 0 0	3,020 0 0	3,335 0 0	3,760 0 0	7,095 0 0
Stationery and Library	200 0 0	150 0 0	200 0 0	80 0 0	280 0 0
Travelling	550 0 0	520 0 0	525 0 0	650 0 0	1,175 0 0
Incidentals	100 0 0	100 0 0	125 0 0	84 0 0	209 0 0
Capital	750 0 0	665 0 0	750 0 0	—	750 0 0
	7,504 0 0	6,924 0 0	7,552 10 0	7,564 0 0	15,116 10 0

REVENUE FROM CONTRIBUTING COLONIES

(Financial Year of Station 1st October—30th September)

Contributing Colony	Estimated Revenue 1947–48	Actual Revenue 1948–49	Estimated Revenue 1948-49	Actual Revenue 1948-49	Total Estimated Revenue 1947–49	Actual Revenue 1947–49	Balance Due	Estimated Revenue 1949–50
	£	£	£	£	£	£	£	£
British Guiana	1,200 0 0	2,100 0 0	2,400 0 0	2,700 0 0	3,600 0 0	4,800 0 0	Nil	2,400 0 0
Jamaica (Government) ..	1,884 19 2	700 0 0	1,875 0 0	1,410 0 0	3,759 19 2	2,110 0 0	1,649 19 2	1,875 0 0
Jamaica (Sugar Manufacturers' Assoc.)	525 0 0	525 0 0	525 0 0	Nil	1,050 0 0	525 0 0	525 0 0	525 0 0
Leeward Islands	772 2 9	300 0 0	770 0 0	1.221 8 1	1,542 2 9	1,521 8 1	Nil	770 0 0
Trinidad (Government) ..	650 10 6	300 0 0	1,000 0 0	1,150 10 6	1,650 10 6	1,450 10 6	Nil	1,000 0 0
Trinidad (Sugar Manufacturers' Assoc.)	650 10 6	300 0 0	1,000 0 0	1,175 15 9	1,650 10 6	1,475 15 9	Nil	1,000 0 0
Windward Islands	135 0 0	67 10 0	135 0 0	202 10 0	270 0 0	270 0 0	Nil	135 0 0
Refund of Postage on Cane Plants despatched ..				42 3 2		42 3 2		
Estimated Revenue from contributing Colonies for 1949-50 ..								7,705 0 0
„ Savings at 30th September, 1948								434 2 10
„ Income 1949-50								8,139 2 10

RESERVE FUND—Contributions from Foreign Countries:—

	1947-48		1948-49	
		Brought forward	£1,613 19 0	
Martinique	£ 198 19 2		201 12 9	
Guadeloupe	198 19 2		*	
Dominican Republic ..	994 15 10		*	
Cayenne	20 14 7		Nil	
Venezuela	200 10 3		*	
Carried forward ..	£1,613 19 0		£1,815 11 9	

* Not yet received.

CHECKED BY
P. T.